

**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: 001-38598

Bloomenergy®

BLOOM ENERGY CORPORATION
(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of incorporation or organization)

4353 North First Street, San Jose, California
(Address of principal executive offices)

77-0565408

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

95134

(Zip Code)

(408) 543-1500

(Registrant's telephone number, including area code)

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

Title of Each Class ⁽¹⁾	Trading Symbol	Name of each exchange on which registered
Class A Common Stock, \$0.0001 par value	BE	New York Stock Exchange

⁽¹⁾ Our Class B Common Stock is not registered but is convertible into shares of Class A Common Stock at the election of the holder.

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, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer ☒ 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. ☒

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

The aggregate market value of the registrant's Class A common stock held by non-affiliates of the registrant was approximately \$2.3 billion based upon the closing price of \$16.50 per share of our Class A common stock on the New York Stock Exchange on June 30, 2022 (the last trading day of the registrant's most recently completed second quarter). Shares of Class A common stock held by each executive officer, director and holder of 10% or more of the outstanding Class A common stock have been excluded in that such persons may be deemed to be affiliates. This determination of affiliate status is not necessarily a conclusive determination for other purposes.

The number of shares of the registrant's common stock outstanding as of February 14, 2023 was as follows:

Class A Common Stock, \$0.0001 par value 190,405,579 shares

Class B Common Stock, \$0.0001 par value 15,690,518 shares

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's definitive proxy statement for the 2023 Annual Meeting of Stockholders (the "2023 Proxy Statement") are incorporated into Part III of this Annual Report on Form 10-K. The 2023 Proxy Statement will be filed with the U.S. Securities and Exchange Commission ("SEC") within 120 days after the registrant's year ended December 31, 2022.

Bloom Energy Corporation
Annual Report on Form 10-K for the Years Ended December 31, 2022
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Unless the context otherwise requires, the terms “we,” “us,” “our,” “Bloom Energy,” “Bloom” and the “Company” each refer to Bloom Energy Corporation and all of its subsidiaries.

SPECIAL NOTE ABOUT FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the “Securities Act”), and Section 21E of the Securities Exchange Act of 1934, as amended (the “Exchange Act”). All statements contained in this Annual Report on Form 10-K other than statements of historical fact, including statements regarding our future operating results and financial position, our business strategy and plans and our objectives for future operations, are forward-looking statements. The words “believe,” “may,” “will,” “estimate,” “continue,” “anticipate,” “predict,” “project,” “potential,” “seek,” “intend,” “could,” “would,” “should,” “expect,” “plan” and similar expressions are intended to identify forward-looking statements.

Forward-looking statements in this Annual Report on Form 10-K include, but are not limited to, our plans and expectations regarding future financial results, including our expectations regarding: our ability to expand into and be successful in new markets, including the biogas and hydrogen market; the impact of the COVID-19 pandemic; our expanded strategic partnership with SK ecoplant; statements about our supply chain (including any direct or indirect effects from the Russia-Ukraine war or geopolitical developments in China); operating results; the sufficiency of our cash and our liquidity; projected costs and cost reductions; development of new products and improvements to our existing products; our manufacturing capacity and manufacturing costs; the adequacy of our agreements with our suppliers; legislative actions and regulatory and environmental compliance; impact of the Inflation Reduction Act on our business; competitive position; management’s plans and objectives for future operations; our ability to obtain financing; our ability to comply with debt covenants or cure defaults, if any; our ability to repay our debt obligations as they come due; trends in average selling prices; the success of our customer financing arrangements; capital expenditures; warranty matters; outcomes of litigation; our exposure to foreign exchange, interest and credit risk; general business and economic conditions in our markets; industry trends; the impact of changes in government incentives; risks related to cybersecurity breaches, privacy and data security; the likelihood of any impairment of project assets, long-lived assets and investments; trends in revenue, cost of revenue and gross profit (loss); trends in operating expenses including research and development expense, sales and marketing expense and general and administrative expense and expectations regarding these expenses as a percentage of revenue; future deployment of our Bloom Energy Servers and Bloom Electrolyzers; our ability to expand our business with our existing customers; our ability to increase efficiency of our products; our ability to market out products successfully in connection with the global energy transition and shifting attitudes around climate change; our business strategy and plans and our objectives for future operations; and the impact of recently adopted accounting pronouncements.

You should not rely upon forward-looking statements as predictions of future events. We have based the forward-looking statements contained in this Annual Report on Form 10-K primarily on our current expectations and projections about future events and trends that we believe may affect our business, financial condition, operating results and prospects. The outcome of the events described in these forward-looking statements is subject to risks, uncertainties and other factors including those discussed in Part I, Item 1A, Risk Factors and elsewhere in this Annual Report on Form 10-K. Moreover, we operate in a very competitive and rapidly changing environment. New risks and uncertainties emerge from time to time and it is not possible for us to predict all risks and uncertainties 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 this Annual Report on Form 10-K. We cannot assure you that the results, events and circumstances reflected in the forward-looking statements will be achieved or occur. Actual results, events or circumstances could differ materially and adversely from those described or anticipated in the forward-looking statements.

The forward-looking statements made in this Annual Report on Form 10-K relate only to events as of the date on which the statements are made. We undertake no obligation to update any forward-looking statements made in this Annual Report on Form 10-K to reflect events or circumstances after the date of this Annual Report on Form 10-K or to reflect new information or the occurrence of unanticipated events, except as required by law. We may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements and you should not place undue reliance on our forward-looking statements.

Our actual results and timing of selected events may differ materially from those anticipated in these forward-looking statements as a result of many factors including those discussed under Part I, Item 1A, Risk Factors and elsewhere in this Annual Report on Form 10-K.

Part I

ITEM 1 - BUSINESS

Overview

Our mission is to make clean, reliable energy affordable for everyone in the world. We created the first large-scale, commercially viable solid oxide fuel-cell based power generation platform that empowers businesses, essential services, critical infrastructure and communities to responsibly take charge of their energy.

Our technology, invented in the United States, is one of the most advanced electricity and hydrogen producing platforms on the market today, with one gigawatt deployed in over 1,000 locations and 6 countries. Our fuel-flexible Bloom Energy Server™ can use biogas, hydrogen, natural gas, or a blend of fuels, to create resilient, sustainable, and cost-predictable power. It can perform at significantly higher efficiencies than traditional, combustion-based resources. In addition, the same solid oxide platform that powers our fuel cells is the basis for creating hydrogen efficiently. The Bloom Electrolyzer™ uses less electricity than other electrolyzers, thereby potentially lowering the overall cost of producing hydrogen, a critical factor towards accelerating the transition to hydrogen as a fuel. The Bloom Electrolyzer diversifies and expands our addressable market to industries that create hard-to-abate emissions, such as heavy industry, and industries seeking out zero-carbon transportation fuels.

We are committed to continuous improvement, innovation, and scale. We operated our electrolyzers at the Department of Energy's Idaho National Laboratory, where we demonstrated that we could produce 1 kg of hydrogen using as little as 37.7 kWh of electricity, an industry leading result, with an average performance of 39.2 kWh per kg of hydrogen.

We are enhancing our production capabilities to support growth. We opened our new, multi-gigawatt factory in Fremont, California, in 2022, which was an investment of \$200 million that significantly increased our capacity to produce our energy platforms. In Delaware, we also invested in our Newark factory to increase production capacity of Energy Servers and inaugurated a high volume electrolyzer manufacturing line for commercial deployment in the United States and Europe, where demand is ramping up. We are regularly taking deliberate steps to reduce costs and increase the efficiency of our platform. Our team has decades of experience in the various specialized disciplines and systems engineering concepts embedded in our technology. As of December 31, 2022, we have 313 issued patents in the United States and 164 issued patents internationally.

At Bloom Energy, we look forward to a net-zero future. Our technology is designed to help enable this future in order to deliver reliable, low-carbon, electricity in a world facing unacceptable levels of power disruptions. Our distributed platform most often generates energy in close proximity to where the same electricity is consumed, thus avoiding the vulnerabilities of conventional transmission and distribution lines. Our resilient platform is designed to keep electricity available for our customers through hurricanes, earthquakes, typhoons, forest fires, extreme heat and grid failures. Unlike traditional combustion power generation, our platform is community-friendly and designed to significantly reduce emissions of criteria air pollutants. We have made tremendous progress toward our goal of utilizing our platform in variety of new applications such as our waste to energy, hydrogen and marine programs, and we are well-positioned as a core platform in the new energy paradigm to help organizations and communities achieve their net-zero objectives.

The United States is currently our second-largest market in terms of revenues, but our largest market in terms of installed base of Energy Servers. Some of our major customers include companies in industries such as data centers, retail, hospitals, farming, semiconductors and other manufacturing. Our resilient technology provides secure power to critical facilities, including data centers, hospitals and high-tech manufacturing. We also work with a number of U.S. financing and distribution partners who purchase and deploy our systems at end-customers' facilities in order to provide "electricity-as-a service." We are actively pursuing new business opportunities based on incentives for microgrids and renewable energy in the landmark Inflation Reduction Action, passed in August 2022.

Our largest market in terms of revenue is the Republic of Korea, a world leader in the deployment of fuel cells for utility-scale electric power generation. We began commercial operation in the Republic of Korea in 2018 and have grown our footprint to more than 400MW's of deployed Energy Servers across South Korea – by 2022, it had become our largest market. SK ecoplant Co., Ltd. ("SK ecoplant", formerly known as SK Engineering & Construction Co., Ltd.), a subsidiary of the SK Group, serves as the primary distributor of our systems in the Republic of Korea. In October 2021, we announced an expansion of our existing partnership with SK ecoplant, that includes purchase commitments of at least 500MW of power for our Energy Servers between 2022 and 2025 on a take or pay basis, the creation of hydrogen innovation centers to advance green hydrogen commercialization, and an equity investment in Bloom Energy.

We are enhancing our capabilities and adding resources to expand our market reach internationally for our electrolyzer solutions, waste-to-energy solutions, and our resiliency solutions for off-takers such as data centers and other industrial processes. In 2022, we entered the European market by signing contracts with customers in Italy, and we signed a marketing initiative in Spain and Portugal with a regional renewable energy marketing enterprise. We strengthened our presence in Asia by expanding to Taiwan. We are also operating smaller deployments in India and Japan with commercial customers, with additional projects in development in other Southeast Asia locations and Australia. We plan to continue our efforts to increase our operations internationally in 2023.

Industry Background

There are numerous challenges facing the traditional system for producing and delivering electricity. We believe these challenges will be the foundation of a transformation in how electricity is produced, delivered, and consumed. We believe this transformation could be similar to the seismic shifts seen in the computer and telecommunications industries, where centralized mainframe computing and landline telephone systems ultimately gave way to the more distributed technologies seen today, as well as the reimagining of business processes, culture and customer experiences.

Providing a resilient energy solution is now a strategic imperative: The rising frequency and intensity of natural disasters and extreme weather in recent years underscores a critical need for greater grid resilience.

According to National Centers for Environmental Information, during 2022, there were eighteen separate billion-dollar weather and climate disaster events including severe storms, tropical cyclones, flooding, winter storms, and wildfires. The total cost from these events of 2022 was \$165.0 billion and was the third most costly year on record, behind 2017 and 2005. 2022 was the eighth consecutive year (2015-2022) in which 10 or more billion-dollar weather and climate disaster events have impacted the United States.

Stakeholders across industries grapple with the question of how to continue providing energy during more frequent and intense natural disasters while maintaining course toward achieving their climate targets. These climate threats are compounded by an increasing concern over the threat of cyber-attacks and physical sabotage to the centralized grid infrastructure. These acute issues further add to a chronic concern; the fragility of decades-old energy system elements that have suffered from deferred maintenance and replacement, which can only be partially remedied by the billions of dollars of new investment from the recently passed infrastructure bill. In an increasingly electrified world, from electric vehicles, to automated manufacturing, to the digitalization of everything, power supply and reliability are more important now than ever. This has elevated the discussion around the essential role that distributed generation and microgrids can play in improving the resilience of both businesses and the grid. As outages increase, businesses are considering the “cost of not having power” instead of just the “cost of power.” Energy resilience is becoming an issue business leaders can no longer afford to neglect – both from a strategic and cost perspective.

There is a rise in centralized capacity constraints: The traditional centralized grid model is increasingly showing weaknesses. For example, in September of 2022, California issued an emergency proclamation order, documenting the drastic measures that must be taken to secure sufficient capacity to be able to avert catastrophic blackouts. Californians were asked to conserve energy, customers with diesel generators were being asked to run them and the state suspended many environmental permitting rules and regulations related to the deployment of power generation. This is one of the many reasons why microgrids, localized energy systems that can operate alongside a main grid or disconnect and operate autonomously, are playing an increasingly important role, providing a critical, twenty-four hours a day and seven days a week (“24x7”), always-on energy solution, powering critical infrastructure, offsetting demand on the grid, and supplying power to the grid when it is most needed.

There is an increasing focus on reducing harmful local emissions: Air pollution is the fifth leading risk factor for mortality worldwide. Calculations of the economic and health benefits associated with reducing localized air pollution such as nitrogen oxides, which are produced by combusting fuel, and particulate matter emissions have been found to exceed the economic and health benefits of reducing carbon emissions. The COVID-19 pandemic has only further shed light on these detrimental health impacts. Recent studies have linked long-term exposure to air pollution and COVID-19 death rates. They have also found that, nationwide, low-income communities of color are exposed to significantly higher levels of pollution, experiencing higher levels of lung disease and other ailments as a result.

Hydrogen is one of the keys to a zero-carbon future: We believe clean hydrogen will be a critical factor in the energy industry of the future, a truly clean alternative for both natural gas and transportation fuels and an alternative means to store energy. Hydrogen’s unique advantages – incredibly high energy density, zero carbon gas emissions when used as a fuel, and ease of storage and transportation – make it an especially attractive investment opportunity for those interested in a zero-carbon

energy mix. The key limiting factor in the use of hydrogen, which does not readily exist in nature as a separate molecule, is that it cannot be mined, extracted or otherwise produced in its desired state without a manufacturing process. As both the transportation and the electricity sectors transition to a zero-carbon future, there will thus be increasing demand for both technologies that can efficiently generate power using hydrogen and for large-scale electrolysis that can produce clean hydrogen at scale.

Our Solutions

Distributed Electricity Production

Our baseload-power fuel cell solution, the Bloom Energy Server, is designed to deliver reliable, resilient, clean and affordable energy for utilities and organizations alike. Suitable to operate parallel with the grid, independent of the grid, or as part of a larger microgrid ecosystem, the Bloom Energy Server is based on our proprietary solid oxide technology that converts fuel, such as natural gas, biogas, hydrogen, or a blend of these fuels, into electricity through an electrochemical process without combustion. The electrical output of our Energy Server is designed to be connected to the customer's main electrical feed, thereby avoiding the transmission and distribution losses associated with a centralized grid system. The modular nature of our solution enables any number of Energy Servers to be clustered together in various configurations, providing solutions from hundreds of kilowatts to hundreds of megawatts. The Energy Server is designed to be easily integrated into community environments due to its aesthetically attractive design, compact space requirement, minimal noise profile and lack of criteria air pollutants. When fueled with biogas, Energy Servers convert methane, which would otherwise be let into our atmosphere or flared, into electricity. Increasing regulations against methane pollutions creates an opportunity for innovative solutions like Bloom Energy Servers.

Our Energy Servers, combined with another party's carbon capture technology, can provide zero-carbon electricity. Our standard Energy Server vents CO₂ into the atmosphere as a byproduct. Used for carbon capture, the Energy Server is configured to vent anode exhaust gas, including the CO₂, which may then be consolidated, compressed and processed to separate the CO₂ for sequestration, or other industrial applications. The compression and processing of the anode exhaust can be done by industrial gas companies. Bloom's anode exhaust, once dried, has a 95% purity of CO₂. This makes it one of the purest streams of CO₂ out of any power generation technology using natural gas, making it comparatively simple and inexpensive to capture. The Inflation Reduction Act (the "IRA") increases the tax credit for carbon capture and sequestration to \$85/ton of CO₂, in addition to lowering the annual threshold quantity of captured emissions required to qualify for the credit to 18,750 metric tons, as well as allowing direct pay for tax-exempt organizations and transferable credits for other taxpayers.

Hydrogen Generation

We believe we are uniquely positioned for the hydrogen future of tomorrow. Using the same solid oxide platform as our Energy Server, the Bloom Electrolyzer is designed to produce scalable and cost-effective hydrogen solutions. Our modular design makes the Bloom Electrolyzer ideal for applications across gas, utilities, nuclear, concentrated solar, ammonia and heavy industries. Our solid oxide, high-temperature electrolyzer is designed to produce hydrogen onsite more efficiently than low-temperature PEM and alkaline electrolyzers. Because it operates at high temperatures, the Bloom Electrolyzer is designed to require less energy to break up water molecules and produce hydrogen. As electricity accounts for nearly 80 percent of the cost of producing hydrogen from electrolysis, using less electricity improves the economics of hydrogen production and helps bolster adoption. The Electrolyzer is designed to produce green hydrogen from 100 percent renewable power. The hydrogen produced onsite at a customer's facility can either be used as fuel or stored for consumption at a later point.

Marine Transportation

We have also adapted our Energy Servers to advance the decarbonization of the marine industry through the design and development of fuel cell powered ships. The marine transportation sector contributes to global pollution, as many ships continue to use carbon-rich fuels such as bunker fuel, diesel, and other hydrocarbons. As global infrastructure for low and emission-free fuels continue to develop, our modular, fuel-flexible and upgradable platform is designed to allow for existing ships in service to be upgraded, allowing the marine transportation sector long-term flexibility and scalability for improved ship design. Furthermore, noise pollution and mechanical vibrations are substantially reduced when Energy Servers are used as a power source aboard ships. Our platform is IMO 2040- and 2050-ready today, with the ability to operate on liquefied natural gas, biogas and blended hydrogen. We are committed to developing the platform to accommodate multiple renewable fuels, such as green methanol and bioethanol, as the marine fuel market develops.

Our Value Proposition

Our energy platform has three key value propositions: resiliency, sustainability and predictability. The three elements of our value proposition emphasize those areas where there is a strong customer need and where we believe we can deliver superior performance.

Resiliency: Our Energy Servers avoid the vulnerabilities of conventional transmission and distribution lines by generating power on-site where the electricity is consumed. The system operates at very high availability due to its modular and fault-tolerant design, which includes multiple independent power generation modules that can be hot-swapped to provide uninterrupted service. Unlike traditional combustion generation, Bloom Energy Servers can be serviced and maintained without powering down the system. Importantly, Bloom Energy Servers that utilize existing natural gas infrastructure rely on a redundant underground mesh network, intended to provide for extremely high fuel availability that is protected from the natural disasters that often disrupt the power grid.

Sustainability: Our Energy Servers uniquely address both the causes and consequences of climate change. Our projects lower carbon emissions by displacing less-efficient fossil fuel generation on the grid, which improves air quality, including in vulnerable communities, by generating electricity without combustion, offsetting combustion from grid resources as well as eliminating the need for dirtier diesel backup power solutions. Our microgrid deployments provide customers with critical resilience to grid instability, including disruptions resulting from climate-related extreme weather events. Our Energy Servers achieve this while consuming no water during operation, with optimized land use as a result of our high-power density.

A large part of our ongoing innovation is focused on the continued reduction of carbon emissions from our Energy Servers, and we are engaged in multiple efforts to align our product roadmap with a zero-carbon trajectory. We are developing new applications and market opportunities in sectors with dirtier grids and higher marginal emissions displacement.

In July 2021, we announced a commitment to match our customer's gas consumption with certified low-leak natural gas, reducing the release of harmful methane emissions stemming from upstream gas production. We are doing this by off-setting the pipeline gas used by our customers with credits for low-leak gas. On April 21, 2022, Bloom Energy and EQT, the largest producer of natural gas in the United States, announced they had closed a trade agreement for the transfer of MiQ + Equitable Origin certificates representing a mix of social, environmental and governance attributes related to the production environment. Bloom has contracted for certificates to apply to its domestic fleet's anticipated natural gas consumption for 2022 and 2023. This program provides a certified leak rate our customers can use to inform lifecycle carbon accounting of their Energy Servers and reinforces our commitment to environmental stewardship and gas sector transformation.

EQT's certified natural gas production currently comprises 4.5% of all-natural gas produced in the United States, making EQT not only the nation's largest natural gas producer, but also the nation's largest producer of certified natural gas. Together, Bloom and EQT are leading the market for certified natural gas, which not only allows end-users to reduce the emissions associated with their value chain but also incentivizes emissions reduction efforts by producers. By converting its U.S. fleet of fuel cell installations – deployed at more than 700 sites – to EQT's certified natural gas, an estimated 176,000 metric tons of CO₂e emissions can be avoided per year when compared to the national average leak rate, the equivalent of more than 38,000 passenger vehicles taken off the road annually. By transitioning our domestic fleet of fuel cells to certified natural gas, we believe we are taking an immediate and impactful step to help eliminate harmful methane emissions as we lay the foundation for a net-zero future.

We are also focused on scaling the generation and use of renewable natural gas (RNG). RNG is pipeline quality natural gas derived from biogas produced from decomposing organic waste, generally from landfills, agricultural waste or wastewater treatment facilities. It can be used as low carbon or net-zero fuel for our Energy Servers, or directly as the power solution in the renewable fuel process which lowers the Carbon Intensity score associated with the renewable fuel commodity.

Carbon intensity is simply defined as CO₂ emissions per unit of energy by the U.S. Energy Information Administration. The carbon intensity score measures greenhouse gas ("GHG") emissions associated with producing, distributing and consuming a fuel, which is measured in grams of CO₂ equivalent to megajoule (gCO₂e/MJ). Different fuels emit different amounts of carbon dioxide in relation to the energy they produce when burned. For example, biofuels such as ethanol and biodiesel have been proven to emit significantly lower GHG emissions than petroleum-based fuels.

Additionally, we are pushing technology and business model boundaries to pioneer carbon capture and utilization and storage potential. It is both more feasible and cost-effective to capture CO₂ emissions from our Energy Servers than from combustion generation, as no costly and complex separation of other gases like nitrogen is required. Captured CO₂ emissions can be stored in underground geologic formations or utilized in new products or processes.

We continue to progress on our development and commercialization of scalable and cost-effective 100 percent hydrogen solutions and zero emission power generation. Our flexible and modular platform approach allows for customization at the time of equipment commissioning and a pathway to upgrade existing systems to align with the sustainability goals of our customers over time. In 2021, we announced the commercial availability of our hydrogen-powered fuel cells and electrolyzers capable of producing clean hydrogen. Our 100 kilowatt hydrogen-powered Energy Server project in the Republic of Korea commenced operations in April 2021 and our Electrolyzers have been successfully installed and began producing hydrogen in January 2022.

Finally, our Electrolyzer is the most efficient electrolyzer technology available today that splits water molecules to produce clean hydrogen. We collaborated with the Department of Energy's Idaho National Lab to prove this efficiency using our electrolyzer and excess nuclear energy to produce clean hydrogen at record-breaking efficiencies. We are now working with many other industries on a variety of applications in the hydrogen economy.

Predictability: In contrast to the rising and unpredictable cost outlook for grid electricity, we offer our customers the ability to lock in cost for electric power over the long-term. Unlike the grid price of electricity, which reflects the cost to maintain and update the entire transmission and distribution system, our price to our customers is based solely on their individual project. In the regions where the majority of our Energy Servers are deployed, our solution typically provides electricity to our customers at a cost that is competitive with traditional grid power prices. In addition, our solution provides greater cost predictability versus rising grid prices. Whereas grid prices are regulated and subject to frequent change based on the utility's underlying costs, customers can contract with us for a known price in each year of their contract. Moreover, we provide customers with a solution that offers all of the fixed equipment and maintenance costs for the life of the contract.

Our Energy Servers are designed to deliver 24x7 power with very high availability, mission-critical reliability and grid-independent capabilities. The Energy Server can be configured to eliminate the need for traditional backup power equipment, such as diesel generators, batteries and uninterruptible power systems, by seamlessly delivering power before and after a grid failure. Our Energy Servers are designed to offer consistent power supply for mission critical operations that require a high level of electrical reliability and uninterrupted availability, such as data centers, hospitals, and biotechnology facilities. This is particularly important as society becomes more reliant on digital systems and sophisticated operational technology. Power quality issues can cause equipment failure, downtime, data corruption and increased operational costs.

Further, our Energy Servers were designed to provide 'quick time to power' – the ability to be deployed and begin generating power in as little as days or weeks – as an important value proposition for customers that need to ramp up power quickly. This capability is ideal for customers who need critical power but are facing utility capacity constraints, delays or additional costs. The modularity, quick deployment, ease of installation and small footprint of our Energy Servers facilitate ease of accessibility to power.

Our Energy Server can be augmented to provide grid-independent operation. Customers can elect an Energy Server technical solution for mission critical applications, such as in data centers or a more basic grid outage protection, such as for a retail store. Customers also have a variety of choices for financing vehicles, contract duration, pricing schedules and fuel procurement.

Technology

Our solid oxide technology platform is the foundation for both our Energy Servers and our Electrolyzers. Solid oxide is unique from other fuel cell chemistries in that it runs at a higher temperature, making it more efficient than other fuel cell technologies. The solid oxide fuel cells in our Energy Servers convert fuel, such as natural gas, biogas, hydrogen, or a blend of fuels, into electricity through an electrochemical reaction without burning the fuel. Each individual fuel cell is composed of three layers: an electrolyte sandwiched between a cathode and an anode. The electrolyte is a solid ceramic material, and the anode and cathode are made from inks that coat the electrolyte. Unlike other types of fuel cells, no precious metals, corrosive acids, or molten materials are required. These fuel cells are the foundational building block of our Energy Servers. Regardless of the starting size of a solution, further scaling can be accomplished after the initial system is deployed, creating ongoing flexibility and scalability for the customer.

Our electrolyzer technology dates to the 1980s, when our co-founders first developed electrolyzers to support the U.S. military and later NASA's Mars exploration programs. In the early 2000s, 19 patents were awarded to Bloom Energy for its electrolyzer technology. With reduced renewable energy costs and the global movement to decarbonize, we believe it is the right moment to commercialize our hydrogen technology which is ready for deployment at scale. The Bloom Electrolyzer is based on our solid oxide technology and is designed to generate hydrogen from electricity at superior efficiencies compared to PEM and alkaline solutions. Our electrolyzer advances decarbonization efforts by providing a clean fuel for carbon-free

generation, injection into the natural gas pipeline, transportation, or for use in industrial processes. Because it operates at high temperatures, the Bloom Electrolyzer requires less energy to break up water molecules and produce hydrogen.

Research and Development

Our research and development organization has addressed complex applied materials, processing and packaging challenges through the invention of many proprietary advanced material science solutions. Over more than a decade, Bloom has built a world-class team of solid oxide fuel cell scientists and technology experts. Our team comprises technologists with degrees in Materials Science, Electrical Engineering, Chemical Engineering, Mechanical Engineering, Civil Engineering and Nuclear Engineering, and includes 52 PhDs within these or related fields. This team has continued to develop innovative technology improvements for our Energy Servers. Since our first-generation technology, we have reduced the costs and increased the output of our systems through the next generation of our Energy Servers and increased the life of our fuel cells by over two and half times.

We have invested and will continue to invest a significant amount in research and development. See our discussion of research and development expenses in Part II, Item 7, *Management's Discussion and Analysis of Financial Condition and Results of Operations* of this Annual Report on Form 10-K for further information.

Competition

We primarily compete against gas engines, combined heat and power systems, and the utility grid; for grid-independent operations, we compete with diesel generators. Our solutions are based on superior reliability, resiliency, cost savings, predictability and sustainability, all of which can be customized to the needs of individual customers. Customers do not currently have alternative solutions that provide all of these important attributes in one platform. As we drive our costs down and make technological improvements, we expect our value proposition to be competitive relative to grid power in additional markets.

Other sources of competition – and the attributes that differentiate us – include:

- *Intermittent solar power paired with storage.* Solar power is intermittent and best suited for addressing day-time peak power requirements, while our Energy Servers are designed to provide stable baseload generation. Storage technology is intended to address the intermittency of solar power, but the low power density of the combined technologies and the challenges of extended poor weather events that sharply decrease solar power production and battery recharging makes the solution impractical for most commercial and industrial customers looking to offset a significant amount of power. As a point of comparison, our Energy Servers provide the same power output in 1/125th of the footprint of a photovoltaic solar installation, allowing us to serve far more of a customer's energy requirements based on a customer's available and typically limited space.
- *Intermittent wind power.* Power from wind turbines is intermittent, similar to solar power. Typically, wind power is deployed for utility-side, grid-scale applications in remote locations but not as a customer-side, distributed power alternative due to prohibitive space requirements and permitting issues. Where distributed wind power is available, it can be combined with storage, with similar benefits and challenges to solar-and-storage combinations. Remote wind farms feeding into the grid do not help end customers avoid the vulnerabilities and costs of the transmission and distribution system.
- *Traditional co-generation systems.* These systems deliver a combination of electric power and heat from combustion sources. We believe we compete favorably because of our non-combustion platform, superior electrical efficiencies, significantly less complex deployment (avoiding heating systems integration and requiring less space), superior availability, aesthetic appeal and reliability. Unlike these systems, which depend on the full and concurrent utilization of waste heat to achieve high efficiencies, we can provide highly efficient systems to any customer based solely on their power needs.
- *Traditional backup equipment.* As our Energy Servers deliver reliable power, particularly in grid-independent configurations where our Energy Servers can operate during grid outages, they can obviate the need for traditional backup equipment, such as diesel generators. By providing combustion-free power 24x7 rather than just as backup, we generally offer a better integrated, more reliable, cleaner and cost-effective solution than these grid-plus-backup systems.

- *Other commercially available fuel cells.* Basic fuel cell technology is over 100 years old. Our Energy Server uses advanced solid oxide fuel cell technology, which produces electricity directly from oxidizing a fuel. The type of solid oxide fuel cell we compete against has a solid oxide or ceramic electrolyte. The advantages of our technology include higher efficiency, long-term stability, elimination of the need for an external fuel reformer, ability to use biogas, natural gas, or hydrogen as a fuel, low emissions and relatively low cost. There are a variety of fuel cell technologies, characterized by their electrolyte material, including:
 - *Proton exchange membrane fuel cells* (“PEM”). PEM fuel cells typically are used in onboard transportation applications, such as powering forklifts, because of their compactness and ability for quick starts and stops. However, PEM technology requires an expensive platinum catalyst, which is susceptible to poisoning by trace amounts of impurities in the fuel or exhaust products. These fuel cells require high-cost fuel input sources of energy or an external fuel reformer, which adds to the cost, complexity and electrical inefficiency of the product. As a result, they are not typically an economically viable option for stationary baseload power generation.
 - *Molten carbonate fuel cells* (“MCFC”). MCFCs are high-temperature fuel cells that use an electrolyte composed of a molten carbonate salt mixture suspended in a porous, chemically inert ceramic matrix of beta-alumina solid electrolyte. The primary disadvantages of current MCFC technology are durability and lower electrical efficiency compared to solid oxide fuel cells. Current versions of the product are built for 300 kilowatt systems, and they are monolithic rather than modular. Smaller sizes are typically not economically viable. In many applications where the heat produced by these fuel cells is not commercially or internally useable continuously, mitigating the heat buildup also becomes a liability.
 - *Phosphoric acid fuel cells* (“PAFC”). PAFCs are a type of fuel cell that uses liquid phosphoric acid as an electrolyte. Developed in the mid-1960s and field-tested since the 1970s, they were the first fuel cells to be commercialized. PAFCs have been used for stationary power generators with output in the 100 kilowatt to 400 kilowatt range. PAFCs are best suited to combined heat and power output applications that require carefully matching and constant monitoring of power and heat requirements (heat is typically not required all year long thus significant efficiency is lost), often making the technology difficult to implement. Further, disadvantages include low power density and poor system output stability.
 - *Low temperature electrolyzers.* In electrolysis, electrical efficiency is a function of temperature, with higher efficiency favored by higher temperature due to better reaction kinetics at higher temperatures and lower polarization losses. The Electrolyzer, which uses solid oxide electrolyzer cells (“SOEC”), is differentiated from Alkaline, Proton Exchange or Polymer Electrolyte Membrane (PEM), and Anion Exchange Membrane (AEM) electrolysis which are low temperature electrolysis methodologies using liquid water. With high temperature electrolysis, the water needs to be heated, vaporized, and brought to operating temperature. By using steam at or near operating temperature as the input to the electrolyzer, the thermal energy requirements are reduced. Integration of SOEC with another process with available waste heat to provide the thermal energy provides additional efficiency gains.

Intellectual Property

Intellectual property is an essential differentiator for our business, and we seek protection for our intellectual property whenever possible. We rely upon a combination of patents, copyrights, trade secrets, and trademark laws, along with employee and third-party non-disclosure agreements and other contractual restrictions to establish and protect our proprietary rights.

We have developed a significant patent portfolio to protect elements of our proprietary technology. As of December 31, 2022, we had 313 issued patents and 136 patent applications pending in the United States, and we had an international patent portfolio comprising 164 issued patents and 345 patent applications pending. Our U.S. patents are expected to expire between 2023 and 2041. While patents are an important element of our intellectual property strategy, our business as a whole is not dependent on any one patent or any single pending patent application.

We continually review our development efforts to assess the existence and patentability of new intellectual property. We pursue the registration of our domain names and trademarks and service marks in the United States and in some international locations. “Bloom Energy” and the “BE” logo are our registered trademarks in certain countries for use with Energy Servers and our other products. We also hold registered trademarks for, among others, “Bloom Box,” “BloomConnect,” “BloomEnergy,” and “Energy Server” in certain countries. In an effort to protect our brand, as of December 31, 2022, we had

eight registered trademarks and two pending applications in the United States and 40 registered trademarks across Australia, China, the European Union, India, Japan, Republic of Korea, Taiwan, the United Kingdom.

When appropriate, we enforce our intellectual property rights against other parties. For more information about risks related to our intellectual property, please see the risk factors set forth under the caption Part I, Item 1A, *Risk Factors - Risks Related to Our Intellectual Property*.

Manufacturing Facilities

Our primary manufacturing facilities for fuel cells and Energy Servers assembly are in Sunnyvale, California, Fremont, California, and Newark, Delaware. We own our 178,000 square-foot manufacturing facility in Newark, which was our first purpose-built Bloom Energy manufacturing center and was designed specifically for copy-exact duplication as we expand, which we believe will help us scale more efficiently. Our Newark facility includes an additional 25 acres available for factory expansion and/or the co-location of supplier plants.

We lease various manufacturing facilities in California and Delaware. The current leases for our 50,000 square-foot principal Sunnyvale manufacturing facility and 44,000 square-foot Mountain View manufacturing facility expire in December 2023 and June 2023, respectively. We leased a new 89,000 square-foot R&D and manufacturing facility in Fremont, California that became operational in April 2021. The lease term of our 56,000 square-foot Repair & Overhaul manufacturing facilities in Newark, Delaware expires in December 2026 and April 2027. Additionally, we leased a new 164,000 square-foot manufacturing facility in Fremont, California that expires in February 2036. In July 2022 we announced the grand opening of this multi-gigawatt manufacturing facility, which represented a \$200 million investment. This followed the recent expansion of the Company's global headquarters in San Jose in June 2021 as well as the opening, in June 2022, of a new research and technical center and a global hydrogen development facility in Fremont with a total space of 73,000 square feet.

In 2020, we established a light-assembly facility in the Republic of Korea, in connection with our efforts to develop a local supplier ecosystem through a joint venture with SK ecoplant. Operations began in early July 2020. Based on the expanded relationship between us and SK ecoplant, the joint venture in 2022 was further extended.

Please see Part I, Item 2, *Properties* for additional information regarding our facilities.

Supply Chain

Our supply chain has been developed, since our founding, with a group of high-quality suppliers that support automotive, semiconductor and other traditional manufacturing organizations. The production of fuel cells requires rare earth elements, precious metals, scarce alloys and industrial commodities. Our operations require raw materials, and in certain cases, third-party services that require special manufacturing processes. We generally have multiple sources of supply for our raw materials and services except in cases where we have specialized technology and material property requirements. Our supply base is spread around many geographies in Asia, Europe and India, consisting of suppliers with multiple areas of expertise in compaction, sintering, brazing and dealing with specialty material manufacturing techniques. Where possible, we responsibly source components like interconnects and balance of system components from various manufacturers on both a contracted and a purchase order basis. We have multi-year supply agreements with some of our supply partners for supply continuity and pricing stability. We are working with our suppliers and partners along all steps of the value chain to reduce costs by improving manufacturing technologies and expanding economies of scale.

There have been a number of disruptions throughout the global supply chain as the global economy reopens; demand for certain components has outpaced the return of the global supply chain to full production. We have experienced an increase in lead times with respect to the delivery of most of our components due to a variety of factors, including supply shortages, shipping delays and labor shortages, and we expect this to continue into the first half of 2023. During 2022, we experienced delays from certain vendors and suppliers as a result of these factors, although we were able to mitigate the impact so that we did not experience delays in the manufacture of our Energy Servers. For additional information on our supply chain, please see Part II, Item 7, *Management's Discussion and Analysis of Financial Condition and Results of Operations – Overview – Certain Factors Affecting our Performance*.

Services

We provide operations and maintenance agreements ("O&M Agreements") for all of our Energy Servers, which are typically renewable at the election of the customer on an annual basis. The customer agrees to pay an ongoing service fee and,

in return, we monitor, maintain and operate the Energy Servers systems on the customer's or owner's behalf. We currently service and maintain every installed Energy Server worldwide.

As of December 31, 2022, our in-house service organization had 136 dedicated field service personnel distributed across multiple locations in both the United States and internationally. Our standard O&M Agreements include full remote monitoring and 24x7 operation of the systems as well as scheduled and unscheduled maintenance, which in practice includes preventative maintenance, such as filter and adsorbents replacements and on-site part and periodic fuel cell replacements.

Our two Remote Monitoring and Control Centers ("RMCC") provide 24x7 coverage of every installed Energy Server worldwide. By situating our RMCC centers in the United States and India we are able to provide 24x7 coverage cost effectively and also provide a dual redundant system with either site able to operate continuously should an issue arise. Each Energy Server we ship includes instrumentation and a secure telemetry connection that enables either RMCC to monitor over 500 system performance parameters in real time. This comprehensive monitoring capability enables the RMCC operators to have a detailed understanding of the internal operation of our Energy Servers. Using proprietary, internally developed software, the RMCC operators can detect changes and override the onboard automated control systems to remotely adjust parameters to ensure the optimum system performance is maintained. In addition, we undertake advanced predictive analytics to identify potential issues before they arise and undertake adjustments prior to a failure occurring.

Our services organization also has a dedicated Repair & Overhaul ("R&O") facility, based in Delaware, in close proximity to our product manufacturing facility. This R&O facility undertakes full refurbishment of returned fuel cells with the capability to restore it to full power, efficiency and life with a less than three weeks turnaround. Close proximity to our Delaware manufacturing facility enables us to review the condition of returned modules and it informs improved manufacturing processes.

Purchase and Financing Options

In order to appeal to the largest variety of customers, we make available several options to our customers. Both in the United States and internationally, we sell Energy Servers directly to customers. In the United States, we also enable customers' use of the Energy Servers through a power purchase or lease offering, made possible through third-party ownership financing arrangements.

Often, our offerings are designed to take advantage of local incentives. In the United States, our financing arrangements are structured to optimize both federal and local incentives, including the Investment Tax Credit ("ITC") and accelerated depreciation. Internationally, our sales are made primarily to distributors who on-sell to, and install for, customers; these deals are also structured to use local incentives applicable to our Energy Servers. Increasingly, we use trusted installers and other sourcing collaborations in the United States to generate transactions.

With respect to the third-party financing options in the United States, a customer may choose a contract for the use Energy Servers in exchange for a capacity-based flat payment (a "Managed Services Agreement") or one for the purchase of electricity generated by the Energy Servers in exchange for a scheduled dollars per kilowatt hour rate (a "Power Purchase Agreement" or "PPA").

Certain customer payments in a Managed Services Agreement are required, regardless of the level of performance of the Energy Server; in some cases it may also include a variable payment based on the Energy Server's performance or a performance-related set-off. Managed Services Agreements are then financed pursuant to a sale-leaseback with a financial institution (a "Managed Services Financing").

PPAs are typically financed on a portfolio basis. We have financed portfolios through tax equity partnerships, acquisition financings and direct sales to investors (each, a "Portfolio Financing").

For additional information about our different financing options, please see Part II, Item 7, *Management's Discussion and Analysis of Financial Condition and Results of Operations – Purchase and Financing Options*.

Sales, Marketing and Partnerships

We sell our Energy Servers through a combination of direct and indirect sales channels. At present, most of our U.S. sales are through our direct sales force, which is segmented by vertical and type of account. A large part of our direct sales force is now focused on our expansion efforts in the United States and creating new opportunities internationally. We are also expanding our relationship with utilities and other commercial customers across the U.S, including hospitals, manufacturing facilities, data centers, agribusinesses, financial institutions, and telecom facilities. We have developed a network of strategic

energy advisors that originate new opportunities and referrals to Bloom Energy, which has been a valuable source of high-quality leads.

We pursue relationships with other companies and partners in areas where collaboration can produce product advancement and acceleration of entry into new geographic and vertical markets. The objectives and goals of these relationships can include one or more of the following: technology exchange, joint sales and marketing, installation, customer financing or service.

As we have cultivated sales as well as strategic and financing partners over the past several years, our sales have been concentrated among a few large customers and distributors each year. During the year ended December 31, 2022, revenue from two customers accounted for approximately 38% and 37% of our total revenue, respectively. Please see Note 1 – *Nature of Business, Liquidity and Basis of Presentation – Concentration of Risk – Customer Risk*.

SK ecoplant in the Republic of Korea is a strategic power generation and distribution partner. Together, we have transacted nearly 330MW of projects totaling more than \$2.3 billion of equipment and expected service revenue. In October 2021, we announced an expansion of our existing partnership with SK ecoplant, that includes purchase commitments for at least 500MW of our Energy Servers between 2022 and 2025 on a take or pay basis, the creation of hydrogen innovation centers in the United States and the Republic of Korea to advance green hydrogen commercialization, and an equity investment in Bloom Energy. Please see Note 17 - *SK ecoplant Strategic Investment* in Part II, Item 8, *Financial Statements and Supplementary Data*.

Sustainability

We are driven by the promise of our contribution to the transformation and decarbonization of energy and transportation sectors globally. We are working to make our technology available across a growing list of regions and applications including biogas, carbon capture, hydrogen, marine, combined heat and power and microgrid projects critical to aligning with a two-degree warming trajectory. Our natural gas based Energy Servers are also an important source of near-term emission reductions and we're committed to evolving the gas sector through our technology development and leading market-based activity.

One manifestation of our market-based evolution is our responsibly sourced gas program. On April 21, 2022, Bloom Energy and EQT, a large producer of natural gas in the United States, announced a certificate trade agreement for MIQ+Equitable Origin certified natural gas. Bloom has purchased certificates for its U.S. fleet's anticipated natural gas consumption for the next two years. This agreement reinforces our commitment to provide affordable, reliable and clean energy sources that were produced with the highest ESG standards.

We continue to progress our development and commercialization of scalable and cost-effective hydrogen and zero emission power generation solutions. Our flexible and modular platform approach allows for customization at the time of equipment commissioning and a pathway to upgrade existing systems to align with the sustainability goals of our customers over time.

As a manufacturer, our commitment to sustainability is reflected not only through the impacts of our products in operation but also through our internal commitment to resource efficiency, responsible design, materials management and recycling. We endeavor to consistently increase our supply chain responsibility and approach to human capital management in ways that help us to continue to deliver products that add long-term societal value.

We are driven by the promise of our contribution to the transformation and decarbonization of energy and transportation sectors globally. We are working to make our technology available across a growing list of applications including biogas, carbon capture, hydrogen, marine and microgrid projects critical to aligning with a two-degree warming trajectory.

Bloom Energy Servers produce clean, reliable energy without combustion that provide greenhouse gas, air quality, water, land-use and resilience benefits for customers and the communities they serve. The Bloom Electrolyzer is designed to utilize the same solid oxide technology platform in a highly efficient and cost-effective hydrogen production process. Our innovative solid oxide fuel cell platform technology offers modular and flexible solutions configurable to address both the causes and consequences of climate change.

Our Energy Servers withdraw water only during start-up and if the system needs to restart. Otherwise, Energy Servers use no water during operation, avoiding water withdrawals of more than 18,000 gallons per megawatt hour. Conversely, thermal power plants require significant amounts of water for cooling. In fact, the number one use of water in the United States is for cooling power plants. Based on data from the Energy Information Administration ("EIA"), total water withdrawal by U.S.

thermoelectric power plants is over 50 trillion gallons annually. The water intensity of U.S. thermoelectric power plants is approximately 13,000 gallons per megawatt hour. This results in over 108 Olympic-sized pools of water saved annually for a 1 megawatt Bloom fuel cell in the United States. Importantly, 55.4% of Bloom's installed base of Energy Servers is in California where all 58 counties are under a drought emergency proclamation and the state is in the driest period in the last 1,200 years. Critically, Bloom projects contribute to enhanced water abundance, improved watershed and ecosystem health through avoided water withdrawal and consumption across the state.

We are focused on energy efficiency in our production and administrative processes and have introduced a significant amount of energy-efficient plant automation over the last several years. Our own Energy Servers power most of our facilities, where suitable, as efficient and resilient energy sources. We also use our Energy Servers to charge employee vehicles at manufacturing facility locations, and as we broaden the integration of our Energy Servers across our real estate portfolio, we will continue to support our employees with lower carbon intensity and resilient onsite electric vehicle charging.

We take a cradle-to-grave perspective on product design and use. We strive to reuse components and recoverable materials where feasible and use conflict-free, non-toxic new resources where needed. We design our equipment so that components can be easily refurbished as needed instead of requiring new equipment. Finally, we cover as many materials and components as possible during end-of-life management, reusing these materials and components. As a function of an approximately 30,000-pound Bloom Energy Server, the weight of components that go to the landfill without a recycling or refurbishment stream comprises approximately 510 pounds, or less than approximately 2% of the total server weight.

U.S. & Global Climate Issues

Global warming and resulting extreme weather are having significant economic, environmental and social impacts in the United States and around the world. These effects and anticipated future impacts have resulted in wide array of market and regulatory responses, and will continue to do so. Our business can be impacted by climate change, and by those market and regulatory responses, in a variety of ways. We closely follow the impacts of climate change on the energy system and its customers, as well as the regulatory, policy and voluntary measures taken in response to those impacts, so that we may understand and respond to changing conditions that may affect our company, our customers, and our investors and business partners. We are responsive to the recommendations from the Task Force on Climate-related Financial Disclosures ("TCFD"), as well as disclosure guidance from the Sustainability Accounting Standards Board ("SASB"). We issued our first TCFD and SASB-aligned Sustainability Report in 2021 followed by another aligned report in 2022. We plan to issue a sustainability report annually.

The direct impacts of climate change on energy systems, including the increased risk they pose to energy service disruption, may provide an opportunity for our extremely reliable and resilient energy generation. New or more stringent international accords, national or state legislation, or regulation of greenhouse gas emission may increase demand for our bioenergy and hydrogen-based products, but they may also make it more expensive or impractical to deploy natural gas-fueled Energy Servers in some markets, notwithstanding their enhanced environmental performance relative to combustion-based technologies, or may cause the loss of regulatory or policy incentives for those deployments. Examples include an anticipated greenhouse gas standard for participation in favorable fuel cell tariffs under consideration in California, new climate emissions restrictions or the introduction of carbon pricing, and the adoption of bans or restrictions on new natural gas interconnections by some local jurisdictions. For more on climate and environmental related risks, see Part I, Item 1A, *Risk Factors – Risks Related to Legal Matters and Regulations*.

Permits and Approvals

Each Energy Server installation must be designed, constructed and operated in compliance with applicable federal, state, international and local regulations, codes, standards, guidelines, policies and laws. To operate our systems, we, our customers and our partners are each required to obtain applicable permits and approvals from federal, state and local authorities for the installation of Energy Servers and Electrolyzers and for the interconnection systems with the local electrical utility and, where the gas distribution system is used, the gas utility as well.

Government Policies and Incentives

There are varying policy frameworks across the United States and internationally designed to support and accelerate the adoption of clean and/or reliable distributed power generation and hydrogen technologies, such as the manufacturing and deployment of our Energy Servers and Electrolyzers. These policy initiatives often come in the form of tax incentives, cash grants, performance incentives, environmental attribute credits, permitting regimes, interconnection policies and/or applicable gas or electric tariffs.

The U.S. federal government provides businesses with an Investment Tax Credit (“ITC”) under Section 48 of the Internal Revenue Code, available to the owners of our Energy Servers for the tax year in which the systems are placed into service. On August 7, 2022, the U.S. Senate passed the Inflation Reduction Act of 2022 (the “IRA”) under the fiscal year 2022 budget reconciliation instructions. On August 16, 2022, the IRA was signed into law. This new bill became the U.S. federal government’s largest-ever investment to fight climate change. The IRA includes numerous investments in climate protection, and, among them, an extension and expansion of the ITC and the Production Tax Credit under Section 45 of the Internal Revenue Code, the addition of expanded tax credits for other technologies and for manufacturing of clean energy equipment, as well as terms allowing parties to more easily monetize the tax credits. The IRA contains a multi-tiered credit-amount structure for many applicable tax credits. Specifically, many of the credits have a lower base credit amount that can be increased up to five times if the taxpayer can satisfy applicable prevailing wage or apprenticeship requirements. The IRA also creates certain bonus tax credit amounts relevant to Bloom products placed in service in 2023 and 2024, available by satisfying domestic content criteria and/or locating within an “energy community”. The IRA also creates tax credits for the production of hydrogen and carbon capture, as well as incentives for clean energy manufacturing. By implementing the IRA, the government aims to make an impact on energy markets so that cleaner options are more affordable to consumers.

Our Energy Servers are currently installed at customer sites in eleven states in the United States, each of which has its own enabling policy framework. Some states have utility procurement programs and/or renewables portfolio standards for which our technology is eligible. Our Energy Servers currently qualify for a variety of benefits and incentives, such as tax exemptions, interconnection benefits, relief from utility charges and other forms of economic and energy benefits, in many states including Connecticut, New Jersey, Maryland, Massachusetts, New York, Pennsylvania, Rhode Island. These policy provisions are subject to change.

Some municipal jurisdictions are considering or have recently enacted building codes or local ordinances that limit access to the natural gas pipeline distribution network, primarily in California and the Northeast. Specific policies vary widely as to whether or not they impact our ability to do business in a given jurisdiction and the vast majority apply only to new, rather than existing, buildings. While these jurisdictions comprise a small minority of our current and prospective business footprint, local consideration of such codes and ordinances continues to evolve.

Government Regulations

Our business is subject to a changing patchwork of energy and environmental laws and regulations that prevail at the federal, state, regional and local level as well as in those foreign jurisdictions in which we operate. Most existing energy and environmental laws and regulations preceded the introduction of our innovative fuel cell technology and were adopted to apply to technologies existing at the time, namely large coal, oil or gas-fired power plants, and more recently solar and wind plants.

Although we generally are not regulated as a utility, existing and future federal, state, international and local government statutes and regulations concerning electricity heavily influence the market for our Energy Servers and services. These statutes and regulations often relate to electricity pricing, net metering, incentives, taxation, competition with utilities, the interconnection of customer-owned electricity generation, interconnection to the gas distribution system, and other issues relevant to the deployment and operation of our products, as applicable. Federal, state, international and local governments continuously modify these statutes and regulations. Governments, often acting through state utility or public service commissions, change and adopt or approve different requirements for regulated entities and rates for commercial customers on a regular basis. These changes can have a positive or negative impact on our ability to deliver cost savings to customers.

At the federal level, the Federal Energy Regulatory Commission (“FERC”) has authority to regulate, under various federal energy regulatory laws, wholesale sales of electric energy, capacity, and ancillary services, and the delivery of natural gas in interstate commerce. Some of our tax equity partnerships in which we participate are subject to regulation under FERC with respect to market-based sales of electricity, which requires us to file notices and make other periodic filings with FERC. In addition, our project with Delmarva Power & Light Company is subject to laws and regulations relating to electricity generation, transmission, and sale at the federal level and in Delaware. To operate our systems, we obtain interconnection agreements from the applicable local primary electricity and gas utilities. In almost all cases, interconnection agreements are standard form agreements that have been pre-approved by the state or local public utility commission or other regulatory bodies with jurisdiction over interconnection agreements. As such, no additional regulatory approvals are typically required for deployment of our systems once interconnection agreements are signed, although they may be required for the export and subsequent sale of electricity or other regulated products.

Product safety standards for stationary fuel cell generators have been established by the American National Standards Institute (“ANSI”). These standards are known as ANSI/CSA FC-1. Our products are designed to meet these standards. Further,

we utilize the Underwriters' Laboratory, or UL, to certify compliance with these standards. Energy Server installation guidance is provided by *NFPA 853: Standard for the Installation of Stationary Fuel Cell Power Systems*. Installations at sites are carried out to meet the requirements of these standards.

Currently, there is little guidance from environmental agencies on whether or how certain environmental laws and regulations may apply to our technologies. These laws can give rise to liability for administrative oversight costs, cleanup costs, property damage, bodily injury, fines, and penalties. Capital and operating expenses needed to comply with environmental laws and regulations can be significant, and violations may result in substantial fines and penalties or third-party damages. In addition, maintaining compliance with applicable environmental laws, such as the Comprehensive Environmental Response, Compensation and Liability Act in the United States, requires significant time and management resources.

Several states in which we currently operate, including California, require permits for emissions of hazardous air pollutants based on the quantity of emissions, most of which require permits only for quantities of emissions that are higher than those observed from our Energy Servers. Other states in which we operate, including New York, New Jersey and North Carolina, have specific exemptions for fuel cells.

For more information about the regulations to which we are subject and the risks to our costs and operations related thereto, please see the risk factors set forth under the caption Part I, Item 1A, *Risk Factors - Risks Related to Legal Matters and Regulations*.

Backlog

The timing of delivery and installations of our products has a significant impact on the timing of the recognition of our product and installation revenues. Many factors can cause a lag between the time a customer signs a contract and our recognition of product revenue. These factors include the number of Energy Servers installed per site, local permitting and utility requirements, environmental, health and safety requirements, weather, and customer facility construction schedules. Many of these factors are unpredictable and their resolution is often outside of our or our customers' control. Customers may also ask us to delay an installation for reasons unrelated to the foregoing, including delays in their financing arrangements. Further, due to unexpected delays, deployments may require unanticipated expenses to expedite delivery of materials or labor to ensure the installation meets our timing objectives. These unexpected delays and expenses can be exacerbated in periods in which we deliver and install a larger number of smaller projects. In addition, if even relatively short delays occur, there may be a significant shortfall between the revenue we expect to generate in a particular period and the revenue that we are able to recognize. For our installations, revenue and cost of revenue can fluctuate significantly on a periodic basis depending on the timing of acceptance and the type of financing used by the customer.

Human Capital

We are committed to attracting and retaining exceptional talent. Investing in and inspiring our people to do their best work is critical for our success. As of December 31, 2022, we had approximately 2,530 full-time employees worldwide, of which 2,166 were located in the United States, 327 were located in India, and 37 were located in other countries. During 2022, our workforce grew by 47% as compared to 2021.

In order to attract and retain our employees, we strive to maintain an inclusive, diverse and safe workplace, with opportunities for our employees to grow and develop in their careers. This is supported by strong compensation, benefits, and health and wellness programs. We are mission driven and hire and develop talent with a passion toward achieving our mission.

Inclusion and Diversity

Our cultural foundation is that of innovation, results, respect, and doing the right thing. One of our greatest strengths is a very talented and diverse employee population. We believe diverse talent leads to better decision making and best positions us to meet the needs of our customers, stockholders, and the communities in which we live and work.

We continuously evolve our hiring strategies, track our progress and hold ourselves accountable to advancing global diversity. We seek to hire employees from a broad pool of talent with diverse backgrounds, perspectives and abilities, and we believe diverse leaders serve as role models for our inclusive workforce. We are proud of our progress, yet we strive for continuous improvement. Our talent acquisition strategy includes recruiting candidates from underrepresented groups through targeted outreach and advertising. In 2022, we also introduced an Effective Interviewing course for hiring managers and interviewers, which covered unconscious bias, legal questions, and a positive candidate experience.

Our continued engagement with organizations that partner with diverse communities have been essential to our efforts to increase women, veteran, and minority representation in our workforce. With the recent hiring efforts in Manufacturing, we've made concerted efforts to advertise and reach out to underrepresented minorities and women in the surrounding counties of our California and Delaware sites. We are actively engaged with local community leaders to broaden our reach to underserved communities. One example is participation in the manufacturing cohort program with Ohlone College in Fremont, California. We hired 10 cohort candidates to train and to obtain business experience, with the ultimate goal of hiring them as employees. We also partner with several veteran search firms to identify talent leaving the military. In 2022, we filled with veterans 50% of Bloom's field service and remote monitoring service roles and 10% of manufacturing maintenance roles.

Finally, our University/Early Careers Program has allowed the company to focus on hiring a diverse early careers workforce. In addition to Ohlone College, we are also partnering with City College of New York/Colin Powell School to identify summer intern talent. These are students from underrepresented minorities, with the majority of them being the first to attend college in their family. We also have partnerships with a number of HBCUs, including State and Howard University. The result of these outreach commitments represents 20% African American, 22% Hispanic and 40% Women of overall newly graduated hires.

Our continued engagement with organizations that work with diverse communities has been vital to our efforts to increase women and minority representation in our workforce. Our "Careers at Bloom Silicon Valley" campaign targets recruiting diverse talent from underserved communities for hourly manufacturing roles. To promote inclusivity, we advertise our jobs in multiple languages and participate in community job fairs giving equal access to opportunities. We actively engage local community leaders to gain access to untapped underserved communities to attract talent that is generally not easily accessible. We are building a diverse talent slate of future generation leaders through our progressive university program.

We recruit talent in diverse communities through:

- Veteran outreach programs
- Society of Women Engineers
- Society of Hispanic Engineers
- Society of Black Engineers
- Historical Black Colleges and Universities

We believe that our statistics are strong, our culture of inclusivity is stronger (as of December 31, 2022):

- 68% of our employee population in the United States is ethnically diverse
- Women make up 23% of our employee population globally
- Our senior leadership team of eleven individuals includes three ethnically diverse individuals and three women
- Women make up 17% of our leadership population (Director-level and above)
- Ethnic minorities represent 42% of our leadership (Director-level and above)

In addition, BEWL (Bloom Energy Women Leadership) was launched in 2022 with the mission of creating a positive environment for women of Bloom to thrive. BEWL is global, targeting for experiential learning, networking, and development for the women at Bloom.

Talent Development and Employee Engagement

We have introduced a comprehensive Contribution Assessment Program designed to link performance to business results, enabling each employee to make a direct connection between their role and contributions and the success of Bloom. This comprehensive program includes goal setting, monthly check-ins, feedback solicitation, and self-assessments. Our Contribution Assessment Program provides employees with the opportunities to achieve their goals and engage in meaningful feedback discussions with their manager leading to development, exposure to new experiences, and real-time learning.

We provide a series of global employee learning sessions to support our employees' ability to effectively engage with their managers. We delivered a "management essentials" training in 2022. We have expanded our development focus by investing in building management capabilities. Our employees have easy access to resources to empower their success via our newly introduced internal website.

We place tremendous emphasis on employee engagement and retention. We administered our first employee engagement survey ("We're Listening") with a record participation rate of 77%. Follow-up actions included specific focus groups with concrete initiatives (investment in development programs and benefits enhancement).

BE Inspired, a new learning series taught by Bloom leaders and employees to the broader Bloom organization strives to increase the depth and breadth of understanding of strategy, our products, and business operations. This series provides the opportunity for all Bloom employees to gain real time knowledge they can use immediately for their roles in the company.

Compensation and Benefits

Our talent strategy is integral to our business success and we design competitive and innovative compensation and benefits programs to help meet the needs of our employees. In addition to salaries, these programs (which vary by country/region) include: annual bonuses, stock awards, an employee stock purchase plan, a 401(k) plan, healthcare and insurance benefits, health savings and flexible spending accounts, paid time off, parental leave, flexible work schedules, an extensive mental health program and fitness center. We also added access to financial planning and education for all levels of the organization, musculo-skeletal health. In 2023, we are also introducing Tuition Reimbursement and family forming benefits. In addition to our broad-based equity award programs, we have used targeted equity-based grants to facilitate retention of critical talent with specialized skills and experience.

Building Connections – With Each Other and our Communities

Building connections between our employees and community is key to achieving our mission. Employee engagement is enhanced through connections, education, and the pride of giving back. Our Connected Employee Series offers cross-functional education to all employees and our Employee Community Series introduces influential community leaders to our increasing role in the broader community and world.

Health, Safety and Wellness

The success of our business is fundamentally connected to the well-being of our people. Accordingly, we are committed to the health, safety and wellness of our employees. We provide our employees and their families with access to a variety of innovative, flexible and convenient health and wellness programs, including benefits that provide and encourage proactive protection and to support their financial, physical and mental well-being by providing tools and resources accessible at or outside of work.

In response to the COVID-19 pandemic, in 2020-2022, we implemented significant changes that we determined were in the best interest of our employees, as well as the communities in which we operate, and which comply with government regulations. This included having some of our employees work from home in 2020 and the first half of 2021 and moving to a hybrid model effective from summer 2021 through the whole year 2022, while implementing additional safety measures for the 49% of our employees continuing critical on-site work in our manufacturing, installation and service organizations. For these populations, we have developed a robust program of on-site testing. Starting during the summer of 2021, we reopened our offices, with testing and vaccination requirements, but we continue to remain flexible and attentive to our employees concerns and safety. As of January 2023, in coordination with local laws, we maintain limited testing requirements and have reinstituted a five-day a week back to office schedule.

Community Investment in 2022

Our employees are mission-driven and passionately invest their time in support of our local communities. Our annual Bloom Energy Stars and Strides charity race in San Jose raises money for the Valley Medical Center Foundation, and funds raised for the inaugural Stars and Strides Delaware race in 2022 directly supported the Delaware Center for Homeless Veterans and the Delaware National Guard Youth Foundation. In California, our employees partnered with the City of San Jose for an Earth Day Tree Planting, helping increase North San Jose's tree canopy as part of a larger effort to address climate change locally, and participated in a holiday toy drive with Family Giving Tree.

In Delaware, our employees supported events to raise funds and provided volunteer hours to support the American Heart Association, the Blood Bank of Delmarva, Delaware Foundation for Science and Math Education, The Newark Partnership, and Delaware Energy Access and Equity Collaborative.

Seasonal Trends and Economic Incentives

Our business and results of financial operations are not subject to industry-specific seasonal fluctuations. The desirability of our solution can be impacted by the availability and value of various governmental, regulatory and tax-based incentives which may change over time.

Corporate Facilities

Our corporate headquarters and principal executive offices are located at 4353 North First Street, San Jose, CA 95134, and our telephone number is (408) 543-1500. Our headquarters is used for administration, research and development, and sales and marketing and also houses one of our RMCC facilities.

Please see Part I, Item 2, *Properties* for additional information regarding our facilities.

Available Information

Our website address is www.bloomenergy.com and our investor relations website address is <https://investor.bloomenergy.com>. Websites are provided throughout this document for convenience only. The information contained on the referenced websites does not constitute a part of and is not incorporated by reference into this Annual Report on Form 10-K. Through a link on our website, we make available the following filings as soon as reasonably practicable after they are electronically filed with or furnished to the SEC: our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, and any amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act, as well as proxy statements and certain filings relating to beneficial ownership of our securities. The SEC also maintains a website at www.sec.gov that contains all reports that we file or furnish with the SEC electronically. All such filings, including those on our website, are available free of charge.

ITEM 1A - RISK FACTORS

Investing in our securities involves a high degree of risk. You should carefully consider the material risks and uncertainties described below that make an investment in us speculative or risky, as well as the other information in this Annual Report on Form 10-K, including our consolidated financial statements and the related notes and "Management's Discussion and Analysis of Financial Condition and Results of Operations" before you decide to purchase our securities. A manifestation of any of the following risks could, in circumstances we may or may not be able to accurately predict, render us unable to conduct our business as currently planned and materially and adversely affect our reputation, business, prospects, growth, financial condition, cash flows, liquidity and operating results. In addition, the occurrence of one or more of these risks may cause the market price of our Class A common stock to decline, and you could lose all or part of your investment. It is not possible to predict or identify all such risks and uncertainties, as our operations could also be affected by factors, events or uncertainties that are not presently known to us or that we currently do not consider to present significant risks to our operations. Therefore, you should not consider the following risks to be a complete statement of all the potential risks or uncertainties that we face.

Risk Factor Summary

The following summarizes the more complete risk factors that follow. It should be read in conjunction with the complete Risk Factors section and should not be relied upon as an exhaustive summary of all the material risks facing our business.

Risks Related to Our Business, Industry and Sales

- The distributed generation industry is an emerging market and distributed generation may not receive widespread market acceptance or demand may be lower than we expect, which may make evaluating our business and future prospects difficult.
- Our products involve a lengthy sales and installation cycle, and if we fail to close sales on a regular and timely basis, our business could be harmed.
- Our Energy Servers have significant upfront costs, and we will need to attract investors to help customers finance purchases.
- The economic benefits of our Energy Servers to our customers depend on both the price of gas and the cost of electricity available from alternative sources, including local electric utility companies, and such cost structure is subject to change.

- If we are not able to continue to reduce our cost structure in the future or to meet service performance expectations, our ability to become profitable may be impaired.
- Deployment of our Energy Servers relies on interconnection requirements, export tariff arrangements and utility tariff requirements that are each subject to change.
- Deployment of our Energy Servers relies on fuel supply and fuel specification requirements, both of which are subject to change.
- We currently face and will continue to face significant competition.
- We derive a substantial portion of our revenue and backlog from a limited number of customers, and the loss of or a significant reduction in orders from a large customer could have a material adverse effect on our operating results and other key metrics.
- Our future growth will depend in part on expanding and diversifying our new product and market opportunities, and if we do not successfully execute on our new product and market opportunities, or if our new product and market opportunities are more limited than we expect, our operating results and future growth prospects could be adversely affected.
- Our ability to develop new products and enter into new markets could be negatively impacted if we are unable to identify and successfully engage with partners to assist in such development or expansion, where necessary or useful.
- Our products may not be successful if we are unable to maintain alignment with evolving industry standards and requirements.

Risks Related to Our Products and Manufacturing

- Our future success depends in part on our ability to increase our production capacity for our Energy Servers and new features and products, and we may not be able to do so in the time frame required, due to availability of parts and equipment among other factors, or not be able to do so in a cost-effective manner.
- If our products contain manufacturing defects, our business and financial results could be harmed.
- The performance of our products may be affected by factors outside of our control, which could result in harm to our business and financial results.
- If our estimates of the useful life for our Energy Servers are inaccurate or we do not meet our performance warranties and performance guaranties, or if we fail to accrue adequate warranty and guaranty reserves, our business and financial results could be harmed.
- Our business is subject to risks associated with construction, utility interconnection, fuel supply, cost overruns and delays, including those related to obtaining government permits and other contingencies that may arise in the course of completing installations.
- The failure of our suppliers to continue to deliver necessary raw materials or other components of our products in a timely manner and to specification could prevent us from delivering our products within required time frames and could cause installation delays, cancellations, penalty payments and damage to our brand and reputation.
- We have, in some instances, entered into long-term supply agreements that could result in excess or, if one or more suppliers do not produce for any reason, insufficient inventory, above market pricing or higher costs, and negatively affect our results of operations.
- We face supply chain competition, including competition from businesses in other industries, which could result in insufficient inventory and negatively affect our results of operations.
- We, and some of our suppliers, obtain capital equipment used in our manufacturing process from sole suppliers and, if this equipment is damaged or otherwise unavailable, our ability to deliver our products on time will suffer.
- Our business has been and continues to be adversely affected by the COVID-19 pandemic.
- Possible new trade tariffs could have a material adverse effect on our business.
- A failure to properly comply with foreign trade zone laws and regulations could increase the cost of our duties and tariffs.
- Any significant disruption in the operations at our headquarters or manufacturing facilities could delay the production of our products, which would harm our business and results of operations.
- Our limited history manufacturing new products, such as our Electrolyzers, makes it difficult to evaluate our future prospects and challenges we may encounter.

Risks Related to Government Incentive Programs

- Our business currently benefits from the availability of rebates, tax credits and other financial programs and incentives, and the reduction, modification, or elimination of such benefits could cause our revenue to decline and harm our financial results.
- In the United States, we rely on tax equity financing arrangements to realize the benefits provided by federal tax credits and accelerated depreciation and in the event these programs are terminated, our financial results could be harmed. We also rely on incentives in the Korean, European and other international markets.

Risks Related to Legal Matters and Regulations

- We are subject to various national, state and local laws and regulations that could impose substantial costs upon us and cause delays in the delivery and installation of our products.
- The installation and operation of our products are subject to environmental laws and regulations in various jurisdictions, and there have been in the past and could continue to be uncertainty with respect to both how these laws and regulations may change over time and the interpretation of these environmental laws and regulations to our products, especially as they evolve.
- As we expand into international markets, we may be subject to local content requirements or pressures which could increase cost or reduce demand for our products.
- With respect to our products that run, in part, on natural gas, we may be subject to a heightened risk of regulation, a potential for the loss of certain incentives, and/or changes in our customers' energy procurement policies.
- Existing regulations and changes to such regulations impacting the electric power industry may create technical, regulatory, and economic barriers, which could significantly reduce demand for our Energy Servers or affect the financial performance of current sites.
- 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.
- Current or future litigation or administrative proceedings could have a material adverse effect on our business, our financial condition and our results of operations.

Risks Related to Our Intellectual Property

- Our failure to effectively protect and enforce our intellectual property rights may undermine our competitive position, and litigation to protect our intellectual property rights may be costly.
- Our patent applications may not result in issued patents, and our issued patents may not provide adequate protection, either of which may have a material adverse effect on our ability to prevent others from commercially exploiting products similar to ours.
- We may need to defend ourselves against claims that we infringed, misappropriated, or otherwise violated the intellectual property rights of others, which may be time-consuming and would cause us to incur substantial costs.

Risks Related to Our Financial Condition and Operating Results

- We have incurred significant losses in the past and we may not be profitable for the foreseeable future.
- Our financial condition and results of operations and other key metrics are likely to fluctuate on a quarterly basis in future periods, which could cause our results for a particular period to fall below expectations, resulting in a severe decline in the price of our Class A common stock.
- If we fail to manage our growth effectively, our business and operating results may suffer.
- If we fail to maintain effective internal control over financial reporting in the future, the accuracy and timing of our financial reporting may be adversely affected.
- Our ability to use our deferred tax assets to offset future taxable income may be subject to limitations that could subject our business to higher tax liability.

Risks Related to Our Liquidity

- We must maintain the confidence of our customers in our liquidity, including in our ability to timely service our debt obligations and in our ability to support and grow our business over the long-term.
- Our indebtedness, and restrictions imposed by the agreements governing our and our PPA Entities' outstanding indebtedness, may limit our financial and operating activities and may adversely affect our ability to incur additional debt to fund future needs.
- We may not be able to generate sufficient cash to meet our debt service obligations or our growth plans.
- Under some circumstances, we may be required to or elect to make additional payments to our PPA Entities or the Equity Investors.

Risks Related to Our Operations

- Expanding operations internationally could expose us to additional risks.
- Data security breaches and cyberattacks could compromise our intellectual property or other confidential information and cause significant damage to our business, the performance of our fleet of Energy Servers, our brand and our reputation.
- If we are unable to attract and retain key employees and hire qualified management, technical, engineering, finance and sales personnel, our ability to compete and successfully grow our business could be harmed.
- Competition for manufacturing employees is intense, and we may not be able to attract and retain the qualified and skilled employees needed to support our business.

Risks Related to Ownership of Our Common Stock

- The stock price of our Class A common stock has been and may continue to be volatile.
- We may issue additional shares of our Class A common stock in connection with any future conversion of the Green Notes (as defined herein) or in connection with our transaction with SK ecoplant, which may dilute our existing stockholders and potentially adversely affect the market price of our Class A common stock.
- The dual class structure of our common stock and the voting agreements among certain stockholders have the effect of concentrating voting control of our Company with KR Sridhar, our Chairman and Chief Executive Officer, and also with those stockholders who held our capital stock prior to the completion of our initial public offering, which limits or precludes your ability to influence corporate matters and may adversely affect the trading price of our Class A common stock.
- We do not intend to pay dividends for the foreseeable future.
- Provisions in our charter documents and under Delaware law could make an acquisition of us more difficult, limit shareholders' rights, and limit the market price of our Class A common stock.
- Increased scrutiny regarding ESG practices and disclosures could result in additional costs and adversely impact our business, brand and reputation.

Risks Related to Our Business, Industry and Sales

The distributed generation industry is an emerging market and distributed generation may not receive widespread market acceptance or demand may be lower than we expect, which may make evaluating our business and future prospects difficult.

The distributed generation industry is still an emerging market in an otherwise mature and heavily regulated energy utility industry, and we cannot be sure that potential customers will accept distributed generation broadly, or our Energy Servers specifically. Enterprises may be unwilling to adopt our Energy Server solution over traditional or competing power sources like distributed solar or electricity from the grid, for any number of reasons, including the perception that our technology or our company is unproven, lack of confidence in our business model, the unavailability of third-party service providers to operate and maintain the Energy Servers, and lack of awareness of our product or their perception of regulatory or political headwinds.

The viability and demand for our Energy Servers in the distributed generation market may be impacted by many factors outside of our control, including:

- market acceptance of our products;
- cost competitiveness, reliability, and performance of our products compared to traditional or competing power sources;
- availability and amount of government subsidies and incentives;
- the emergence, continuance, or success of, or increased government support for, other alternative energy generation technologies and products;
- prices of traditional or competing power sources;
- geopolitical and macroeconomic instability, including wars, terrorism, political unrest (including, for example, the conflict between Russia and Ukraine and tensions between China and Taiwan), actual or threatened public health emergencies and outbreak of disease (including for example, the COVID-19 pandemic), inflation, the recessionary environment, boycotts, adoption or expansion of government trade restrictions, and other business restrictions which may negatively impact the demand for our products or which may cause our customers to push out, cancel, or refrain from placing orders; and
- an increase in interest rates or tightening of the supply of capital in the global financial markets (including a reduction in total tax equity availability) which could make it difficult to finance our products.

If the market for our products and services does not continue to develop as we anticipate, our business will be harmed. As a result, predicting our future revenue and appropriately budgeting for our expenses is difficult, and we have limited insight into trends that may emerge and affect our business. If actual results differ from our estimates or if we adjust our estimates in future periods, our operating results and financial position could be materially and adversely affected.

Our products involve a lengthy sales and installation cycle, and if we fail to close sales on a regular and timely basis, our business could be harmed.

Our sales cycle is typically 12 to 18 months but can vary considerably. In order to make a sale, we must typically provide a significant level of education to prospective customers regarding the use and benefits of our product and our technology. The period between initial discussions with a potential customer and the eventual sale of even a single product usually depends on a number of factors, including the potential customer's budget, selection of financing type, and term of the contract. Prospective customers often undertake a significant evaluation process that may further extend the sales cycle, and which evaluation may be negatively impacted by general market and economic conditions such as inflation, rising interest rates, availability of capital, a recessionary environment, geopolitical instability, energy availability and costs, and the availability and effects of government initiatives. Once a customer makes a formal decision to purchase our product, the fulfillment of the sales order by us requires a substantial amount of time. Generally, the time between the entry into a sales contract with a customer and the installation of our Energy Servers can range from nine to twelve months or more. This lengthy sales and installation cycle is subject to a number of significant risks over which we have little or no control. Because of both the long sales and long installation cycles, we may expend significant resources without having certainty of generating a sale.

These lengthy sales and installation cycles increase the risk that an installation may be delayed and/or may not be completed. In some instances, a customer can cancel an order for a particular site prior to installation, and we may be unable to recover some or all of our costs in connection with design, permitting, installation and site preparations incurred prior to cancellation. Cancellation rates can be as high as 5% to 10% in any given period due to factors outside of our control, including an inability to install an Energy Server at the customer's chosen location because of permitting or other regulatory issues, delays or unanticipated costs in securing interconnection approvals or necessary utility infrastructure, unanticipated changes in the cost, or other reasons unique to each customer. Our operating expenses are based on anticipated sales levels, and many of our expenses are fixed. If we are unsuccessful in closing sales after expending significant resources or if we experience delays or cancellations, our business could be materially and adversely affected. Since, in general, we do not recognize revenue on the sales of our products until delivery or complete installation, a small fluctuation in the timing of the completion of our sales transactions could cause our operating results to vary materially from period to period.

Our Energy Servers have significant upfront costs, and we will need to attract investors to help customers finance purchases.

Our Energy Servers have significant upfront costs. In order to expand our offerings to customers who lack the financial capability to purchase our Energy Servers directly and/or who prefer to lease the product or contract for our services on a pay-as-you-go model, we subsequently developed various financing options that enabled customers use of the Energy Servers without a direct purchase through third-party ownership financing arrangements. For an overview of these different financing arrangements, please see Part II, Item 7, *Management's Discussion and Analysis of Financial Condition and Results of Operations – Purchase and Financing Options*. If in any given quarter we are not able to secure funding in a timely fashion, or our customers are unable to secure their own financing in a timely fashion, our results of operations and financial condition will be negatively impacted. We continue to innovate our customer contracts to attempt to attract new customers and these may have different terms and financing conditions from prior transactions.

We rely on and need to grow committed financing capacity with existing partners or attract additional partners to support our growth, finance new projects and new types of product offerings. In addition, at any point in time, our ability to deploy our backlog is contingent on securing available financing. Our ability to attract third-party financing depends on many factors that are outside of our control, including an investors' ability to utilize tax credits and other government incentives, interest rate and/or currency exchange fluctuations, our perceived creditworthiness and the condition of credit markets generally. Our financing of customer purchases of our Energy Servers is subject to conditions such as the customer's credit quality and the expected minimum internal rate of return on the customer engagement, and if these conditions are not satisfied, we may be unable to finance purchases of our Energy Servers, which would have an adverse effect on our revenue in a particular period. If we are unable to help our customers arrange financing for our Energy Servers generally, our business will be harmed. Additionally, the Managed Services Financing option, as with all leases, is also limited by the customer's willingness to commit to making fixed payments regardless of the performance of the Energy Servers or our performance of our obligations under the customer

agreement. To the extent we are unable to arrange future financings for any of our current projects, our business would be negatively impacted.

Further, our sales process for those transactions, that require financing, require that we make certain assumptions regarding the cost of financing capital. Actual financing costs may vary from our estimates and financing may be more difficult or costly to secure, or may not be available, due to factors outside of our control, including changes in customer creditworthiness, macroeconomic factors, such as inflation, interest rates, a recessionary environment, geopolitical instability, and volatility in capital markets, the returns offered by other investment opportunities available to our financing partners, and other factors. If the cost of financing ultimately exceeds our estimates, or we or our customers are unable to secure financing, we may be unable to proceed with some or all of the impacted projects or our revenue from such projects may be less than our estimates.

The economic benefits of our Energy Servers to our customers depend on both the price of gas available from the local gas utilities and the cost of electricity available from alternative sources, including local electric utility companies, and such cost structure is subject to change.

We believe that a customer's decision to purchase our Energy Servers is significantly influenced by its price, the price predictability of electricity generated by our Energy Servers in comparison to the retail price, and the future price outlook of electricity from the local utility grid and other energy sources. These prices are subject to change and may affect the relative benefits of our Energy Servers. Factors that could influence these prices and are beyond our control include the impact of energy conservation initiatives that reduce electricity consumption; construction of additional power generation plants (including nuclear, coal or natural gas); technological developments by others in the electric power industry; the imposition of "departing load," "standby," power factor charges, greenhouse gas emissions charges, or other charges by local electric utility or regulatory authorities; and changes in the rates offered by local electric utilities and/or in the applicability or amounts of charges and other fees imposed or incentives granted by such utilities on customers. In addition, even with available subsidies for our products, the current low cost of grid electricity in some states in the United States and some foreign countries does not render our product economically attractive.

Furthermore, an increase in the price of natural gas or other fuels or curtailment of availability (e.g., as a consequence of physical limitations or adverse regulatory conditions for the delivery of production of natural gas or other fuels) or the inability to obtain natural gas or other fuel service could make our Energy Servers less economically attractive to potential customers and reduce demand. While our Energy Servers can operate using hydrogen or biofuels, the availability and current high cost of those natural gas alternatives in a particular location may make them less attractive to potential customers, reducing the differentiation of our products.

If we are not able to continue to reduce our cost structure in the future or to meet service performance expectations with respect to our Energy Servers, our ability to become profitable may be impaired.

We must continue to reduce the manufacturing costs for our Energy Servers to expand our markets. Additionally, certain of our existing service contracts were entered into based on projections regarding service costs reductions that assume continued advances in our manufacturing and services processes that we may be unable to realize. Future increases to the cost of components and raw materials would offset our efforts to reduce our manufacturing and services costs. For example, during the second half of 2021, we experienced price increases in raw materials, which are used in our components and subassemblies for our Energy Servers. Any increases in the costs of components, raw materials and/or labor, whether as a result of supply chain constraints or pressures, inflation or rising interest rates, could slow our growth and cause our financial results and operational metrics to suffer.

In addition, we may face increases in our other expenses including increases in wages or other labor costs as well as installation, marketing, sales or related costs. In order to expand into new markets (in which the price of electricity from the grid is lower) while still maintaining our current margins, we will need to continue to reduce our costs. Increases in any of these costs or our failure to achieve projected cost reductions could adversely affect our results of operations and financial condition and harm our business and prospects. If we are unable to reduce our Energy Server cost structure in the future, we may not be able to achieve profitability, which could have a material adverse effect on our business and our prospects.

Deployment of our Energy Servers relies on interconnection requirements, export tariff arrangements and utility tariff requirements that are each subject to change.

Because our Energy Servers are designed to operate at a constant output 24x7, while our customers' demand for electricity typically fluctuates over the course of the day or week, there are often periods when our Energy Servers are

producing more electricity than a customer may require, and such excess electricity must generally be exported to the local electric utility. Export of customer-generated power from our Energy Servers is generally provided for in the markets in which we offer our fuel cells pursuant to applicable laws, regulations and tariffs, but not under all circumstances, and may be restricted due to interconnection, relevant tariff or other issues. Many, but not all, local electric utilities provide compensation to our customers for such electricity under “fuel cell net metering” (which often differs from solar net metering) or other customer generation programs.

Utility tariffs and fees, interconnection agreements and fuel cell net metering requirements are subject to changes in availability and terms, and some jurisdictions do not allow interconnections or export at all. At times in the past, such changes have had the effect of significantly reducing or eliminating the benefits of such programs. Changes in the availability of, or benefits offered by, utility tariffs, the applicable net metering requirements or interconnection agreements in the jurisdictions in which we operate or in which we anticipate expanding into in the future could adversely affect the demand for our Energy Servers. For example, in California, the fuel cell net metering tariff expressly addressing fuel cells (referred to as the “Fuel Cell Net Energy Metering” (“FC NEM”)) currently expires at the end of 2023, although other more generally applicable tariffs are available for customers deploying fuel cells. We cannot predict the outcome of regulatory proceedings addressing tariffs that would include customers utilizing fuel cells. If there an economical tariff for customers utilizing fuel cells is not available in a given jurisdiction, it may limit or end our ability to sell and install our Energy Servers in that jurisdiction. Further, permitting and other requirements applicable to electric and gas interconnections are subject to change. For example, some jurisdictions are limiting new gas interconnections, although others are allowing new gas interconnections for non-combustion resources like our Energy Servers.

Deployment of our Energy Servers relies on fuel supply and fuel specification requirements, and fuel supply and fuel specifications are subject to change.

Because our Energy Servers are designed to operate at a constant output 24x7, our Energy Servers require a constant source of fuel such as natural gas, biogas, or hydrogen. Fuel for our Energy Servers is typically provided by local gas utilities. We rely on local gas utilities to provide constant fuel supply within our fuel specifications. Additionally, new regulations may require a switch to a different fuel for which there may be limited availability, such as biogas. Adverse fuel supply constraints or fuel outside of our fuel specifications may create challenges for our Energy Servers to be deployed consistent with our project timelines or our customers’ expectations.

We currently face and will continue to face significant competition.

We compete for customers, financing partners and incentive dollars with other electric power providers. Our Bloom Energy Servers compete with a broad range of companies and technologies, including traditional energy suppliers, such as public utilities, and other energy providers utilizing traditional co-generation systems, nuclear, hydro, coal or geothermal power, companies utilizing intermittent solar or wind power paired with storage, and other commercially available fuel cell companies utilizing PEM, MCFC or PAFC. We also compete with traditional backup energy equipment such as diesel generators. Our Electrolyzers compete with low temperature electrolyzer companies using Alkaline, Proton, PEM or AEM electrolysis. *See our discussion of competition in Item 1 – Business – Competition.*

Many of our competitors, such as traditional utilities and other companies offering distributed generation products, have longer operating histories, customer incumbency advantages, access to and influence with local and state governments, and access to more capital resources than us. Significant developments in alternative technologies, such as energy storage, wind, solar or hydro power generation, or improvements in the efficiency or cost of traditional energy sources, including coal, oil, natural gas used in combustion, or nuclear power, may materially and adversely affect our business and prospects in ways we cannot anticipate. We may also face new competitors who are not currently in the market, including companies with newer or better technologies or products, larger providers or traditional utilities or other existing competitors that may enter our market segments. If we fail to adapt to changing market conditions and to compete successfully with grid electricity or new competitors, our growth will be limited, which would adversely affect our business results.

We derive a substantial portion of our revenue and backlog from a limited number of customers, and the loss of or a significant reduction in orders from a large customer could have a material adverse effect on our operating results and other key metrics.

In any particular period, a substantial amount of our total revenue has and could continue to come from a relatively small number of customers. As an example, in the year ended December 31, 2022, two customers accounted for approximately 38% and 37% of our total revenue. The loss of any large customer order or any delays in installations of new products with any large customer would materially and adversely affect our business results.

Our future growth will depend on expanding and diversifying our new product and new market opportunities, and if we do not successfully execute on our new product and new market opportunities, or if our new product and new market opportunities are more limited than we expect, our operating results and future growth prospects could be adversely affected.

We are attempting to enhance our future growth opportunities by expanding the features of and uses for our Energy Servers, including providing carbon capture and heat capture features, enabling use in marine transportation and by developing and launching our Electrolyzer. Additionally, we are expanding the markets in which we sell our Energy Servers. These are new features, products, and markets for us. As a result, these opportunities will require our attention, which may include personnel, financial resources and management attention. If we do not appropriately allocate our resources in line with the market and the developing opportunities, our business and results of operations could be adversely affected.

Our investments also may not result in the growth we expect, or the timing of when we expect it, for a variety of reasons, including but not limited to, changes in growth trends, evolving and changing markets and increasing competition, market opportunities, and technology and product innovation. We may introduce new technologies or products that do not work, are not delivered on a timely basis, are not developed according to product and/or cost specifications, or are not well received by customers. Moreover, there may be fewer opportunities than we expect due to a decline in business or economic conditions or a decreased demand in these markets or for our new products from our expectations, our inability to successfully execute our sales and marketing plans, or for other reasons. In addition to our current growth opportunities, our future growth may be reliant on our ability to identify and develop potential new growth opportunities. This process is inherently risky and may result in investments in time and resources for which we do not achieve any return or value. These risks are enhanced by attempting to introduce multiple breakthrough technologies and products simultaneously.

Our growth opportunities and those opportunities we may pursue are subject to constant and rapidly changing and evolving technologies and evolving industry standards and may be replaced by new technology concepts or platforms. If we do not develop innovative and reliable product offerings and enhancements in a cost-effective and timely manner that are attractive to customers in these markets, if we are otherwise unsuccessful entering and competing in these new product categories, if the new product categories in which we invest our limited resources do not emerge as the opportunities or do not produce the growth or profitability we expect, or when we expect it, or if we do not correctly anticipate changes and evolutions in technology and platforms, our business and results of operations could be adversely affected.

Our ability to develop new products and enter into new markets could be negatively impacted if we are unable to identify and successfully engage with partners to assist in such development or expansion, where necessary or useful.

We continue to develop new features and products as well as enter into new markets. As we sell new features and products, such as our Energy Servers for marine transport and our Electrolyzers, and move into new markets, including international markets, we may need to identify business partners and suppliers in order to facilitate such development and expansion. Identifying such partners and suppliers is a lengthy process and is subject to significant risks and uncertainties, such as an inability to negotiate mutually acceptable terms or such partner's inability to execute as negotiated. In addition, there could be delays in the design, manufacture and installation of new products and we may not be timely in the development of new products or entry into new markets, limiting our ability to expand our business and harming our financial condition and results of operations.

Our products may not be successful if we are unable to maintain alignment with evolving industry standards and requirements.

As we continue to invest in research and development to sustain or enhance our existing products, such as our Energy Server, the introduction of new technologies and the emergence of new industry standards or requirements could render them obsolete. Further, in developing our products, we have made, and will continue to make, assumptions with respect to which standards or requirements will be required by our customers, standards-setting organizations and applicable law. If market acceptance of our products is reduced or delayed or the standards-setting organizations or legislative or regulatory authorities fail to develop timely commercially viable standards our business would be harmed.

Risks Related to Our Products and Manufacturing

Our future success depends in part on our ability to increase our production capacity for our Energy Servers and new features and products, and we may not be able to do so in the time frame required, due to availability of parts and equipment among other factors, or not be able to do so in a cost-effective manner.

To the extent we are successful in growing our business, we may need to increase our production capacity of our Energy Servers. Our ability to plan, construct and equip additional manufacturing facilities is subject to significant risks and uncertainties, including the following:

- The risks inherent in the development and construction of new facilities, including risks of delays and cost overruns as a result of factors outside our control, which may include delays in government approvals, burdensome permitting conditions, geopolitical instability, inflation, labor shortages and delays in the delivery of manufacturing equipment and subsystems that we manufacture or obtain from suppliers (including due to the COVID-19 pandemic).
- Adding manufacturing capacity in any international location will subject us to new laws and regulations including those pertaining to labor and employment, environmental and export / import. In addition, it brings with it the risk of managing larger scale foreign operations.
- We may be unable to achieve the production throughput necessary to achieve our target annualized production run rate at our current and future manufacturing facilities.
- Manufacturing equipment may take longer and cost more to engineer and build than expected, and may not operate as required to meet our production plans.
- We may depend on third-party relationships in the development and operation of additional production capacity, which may subject us to the risk that such third parties do not fulfill their obligations to us under our arrangements with them.
- We may be unable to attract or retain qualified personnel. For example, currently the market for manufacturing labor has been constrained, which could pose a risk to our ability to increase production.

If we are unable to expand our manufacturing facilities or develop our existing facilities in a timely manner to meet increased demand, we may be unable to further scale our business, which would negatively affect our results of operations and financial condition. Conversely, if the demand for our products or our production output decreases or does not rise as expected, we may not be able to spread a significant amount of our fixed costs over the production volume, resulting in a greater than expected per unit fixed cost, which would have a negative impact on our financial condition and our results of operations.

If our products contain manufacturing defects, our business and financial results could be harmed.

Our products are complex and they may contain undetected or latent errors or defects. In the past, we have experienced latent defects only discovered once the Energy Server was deployed in the field. Changes in our supply chain or the failure of our suppliers to otherwise provide us with components or materials that meet our specifications could introduce defects into our products. As we grow our manufacturing volume, the chance of manufacturing defects could increase. In addition, new feature launches, product introductions or design changes made for the purpose of cost reduction, performance improvement, fulfilling new customer requirements or new market demand or improved reliability could introduce new design defects that may impact product performance and life. Any design or manufacturing defects or other failures of our products to perform as expected could cause us to incur significant service and re-engineering costs, divert the attention of our engineering personnel from product development efforts, and significantly and adversely affect customer satisfaction, market acceptance, and our business reputation.

If any of our products are defective or fail because of their design, or if changes in applicable laws or regulations, or in the enforcement thereof, require us to redesign or recall our products, we also may incur additional costs and expenses. The process of identifying and recalling a product may be lengthy and require significant resources, and we may incur significant replacement costs, contract damage claims from our customers, product liability, property damage, personal injury or other claims and liabilities, and brand and reputational harm. Significant costs or payments made in connection with warranty and product liability claims and product recalls could harm our financial condition and results of operations.

Furthermore, we may be unable to correct manufacturing defects or other failures of our products in a manner satisfactory to our customers, which could adversely affect customer satisfaction, market acceptance, and our business reputation.

The performance of our products may be affected by factors outside of our control, which could result in harm to our business and financial results.

Field conditions, such as the quality of the natural gas or alternative fuel supply and utility processes, which vary by region and may be subject to seasonal fluctuations or environmental factors such as smoke from wild fires, have affected the performance of our Energy Servers and are not always possible to predict until the Energy Server is in operation. As we move into new geographies and deploy new features, products and service configurations, we may encounter new and unanticipated field conditions (including as a result of climate change). Adverse impacts on performance may require us to incur significant service and re-engineering costs or divert the attention of our engineering personnel from product development efforts. Furthermore, we may be unable to adequately address the impacts of factors outside of our control in a manner satisfactory to our customers. Any of these circumstances could significantly and adversely affect customer satisfaction, market acceptance, and our business reputation.

If our estimates of the useful life for our Energy Servers are inaccurate or we do not meet our performance warranties and performance guaranties, or if we fail to accrue adequate warranty and guaranty reserves, our business and financial results could be harmed.

We offer certain customers the opportunity to renew their O&M Agreements (defined herein) on an annual basis, for up to 20 years, at prices predetermined at the time of purchase of the Energy Server. We also provide performance warranties and performance guaranties covering the efficiency and output performance of our Energy Servers. Our pricing of these contracts and our reserves for warranty and replacement are based upon our estimates of the useful life of our Energy Servers and those components that are replaced as a part of standard maintenance, including assumptions regarding improvements in power module life that may fail to materialize. We do not have a long history with a large number of field deployments, and our estimates may prove to be incorrect. Failure to meet these warranty and performance guaranty levels may require us to replace the Energy Servers at our expense or refund their cost to the customer, or require us to make cash payments to the customer based on actual performance, as compared to expected performance, capped at a percentage of the relevant equipment purchase prices. We accrue for product warranty costs and recognize losses on service or performance warranties when required by U.S. GAAP based on our estimates of costs that may be incurred and based on historical experience. However, as we expect our customers to renew their O&M Agreements each year, the total liability over time may be more than the accrual. Actual warranty expenses have in the past been and may in the future be greater than we have assumed in our estimates, the accuracy of which may be hindered due to our limited history operating at our current scale. Therefore, if our estimates of the useful life for our products are inaccurate or we do not meet our performance warranties and performance guaranties, or if we fail to accrue adequate warranty and guaranty reserves, our business and financial results could be harmed.

Our business is subject to risks associated with construction, utility interconnection, fuel supply, cost overruns and delays, including those related to obtaining government permits and other contingencies that may arise in the course of completing installations.

Because we often do not recognize revenue on the sales of our products until installation, our financial results depend to some degree on the timeliness of the installation of our products. Furthermore, in some cases, the installation of our products may be on a fixed price basis, which subjects us to the risk of cost overruns or other unforeseen expenses in the installation process.

The construction, installation, and operation of our products at a particular site is also generally subject to oversight and regulation in accordance with national, state, and local laws and ordinances relating to building codes, safety, environmental protection, and related matters, and typically require various local and other governmental approvals and permits, including environmental approvals and permits, that vary by jurisdiction. In some cases, these approvals and permits require periodic renewal. For more information regarding these restrictions, please see the risk factors in the section entitled “*Risks Related to Legal Matters and Regulations*.” As a result, unforeseen delays in the review and permitting process could delay the timing of the construction and installation of our products and could therefore adversely affect the timing of the recognition of revenue related to the installation, which could harm our operating results in a particular period.

In addition, the completion of many of our installations depends on the availability of and timely connection to the natural gas grid and the local electric grid. In some jurisdictions, local utility companies or the municipality have denied our request for connection or have required us to reduce the size of certain projects. In addition, some municipalities have recently adopted restrictions that prohibit any new construction that allows for the use of natural gas. For more information regarding these restrictions, please see the risk factor entitled “*As a technology that runs, in part, on fossil fuel, we may be subject to a heightened risk of regulation, to a potential for the loss of certain incentives, and to changes in our customers’ energy*”

procurement policies.” Any delays in our ability to connect with utilities, delays in the performance of installation-related services, or poor performance of installation-related services by our general contractors or sub-contractors will have a material adverse effect on our results and could cause operating results to vary materially from period to period.

Furthermore, we rely on the ability of our third-party general contractors to install products at our customers’ sites and to meet our installation requirements. We currently work with a limited number of general contractors, which has impacted and may continue to impact our ability to make installations as planned. Our work with contractors or their sub-contractors may have the effect of our being required to comply with additional rules (including rules unique to our customers), working conditions, site remediation, and other requirements, which can add costs and complexity to an installation project. The timeliness, thoroughness, and quality of the installation-related services performed by some of our general contractors and their sub-contractors in the past have not always met our expectations or standards and may not meet our expectations and standards in the future.

The failure of our suppliers to continue to deliver necessary raw materials or other components of our products in a timely manner and to specification could prevent us from delivering our products within required time frames and could cause installation delays, cancellations, penalty payments and damage to our brand and reputation.

We rely on a limited number of third-party suppliers, and in some cases sole suppliers, for some of the raw materials and components used to manufacture our products, including certain rare earth materials and other materials that may be of limited supply. If our suppliers provide insufficient inventory to meet customer demand or such inventory is not at the level of quality required to meet our standards or if our suppliers are unable or unwilling to provide us with the contracted quantities (as we have limited or in some case no alternatives for supply), our results of operations could be materially and negatively impacted. If we fail to develop or maintain our relationships with our suppliers, or if there is otherwise a shortage or lack of availability of any required raw materials or components, we may be unable to manufacture our products or our products may be available only at a higher cost or after a long delay.

Due to increased demand across a range of industries, the global supply chain for certain raw materials and components, including semiconductor components and specialty metals, has experienced significant strain. The COVID-19 pandemic, the macroeconomic environment, and geopolitical instability have also contributed to and exacerbated this strain. There can be no assurance that the impact of these issues on the supply chain will not continue, or worsen, in the future. Significant delays and shortages could prevent us from delivering our products to our customers within required time frames and cause order cancellations, which would adversely impact our cash flows and results of operations.

In some cases, we have had to create our own supply chain for some of the components and materials utilized in our fuel cells. We have made significant expenditures to expand and bolster our supply chain. In many cases, we entered into contractual relationships with suppliers to jointly develop the components we needed. These activities are time and capital intensive. In addition, some of our suppliers use proprietary processes to manufacture components. We may be unable to obtain comparable components from alternative suppliers without considerable delay, expense, or at all, as replacing these suppliers could require us either to make significant investments to bring the capability in-house or to invest in a new supply chain partner. Some of our suppliers are smaller, private companies, heavily dependent on us as a customer. If our suppliers face difficulties obtaining the credit or capital necessary to expand their operations when needed, they could be unable to supply necessary raw materials and components needed to support our planned sales and services operations, which would negatively impact our sales volumes and cash flows.

The failure by us to obtain raw materials or components in a timely manner or to obtain raw materials or components that meet our quantity and cost requirements could impair our ability to manufacture our products, increase the costs of our products or increase the costs of servicing our existing portfolio of Energy Servers. If we cannot obtain substitute materials or components on a timely basis or on acceptable terms, we could be prevented from delivering our products to our customers within required time frames or service our existing fleet of Energy Servers in accordance with their respective O&M Agreements, which could result in sales and installation delays, cancellations, penalty payments, warranty breaches, or damage to our brand and reputation, any of which could have a material adverse effect on our business and results of operations. In addition, we rely on our suppliers to meet quality standards, and the failure of our suppliers to meet those quality standards could cause delays in the delivery of our products, unanticipated servicing costs, and damage to our brand and reputation.

We have, in some instances, entered into long-term supply agreements that could result in excess or, if one or more suppliers do not produce for any reason, insufficient inventory, above market pricing or higher costs, and negatively affect our results of operations.

We have entered into long-term supply agreements with certain suppliers. Some of these supply agreements provide for fixed or inflation-adjusted pricing, substantial prepayment obligations and in a few cases, supplier purchase commitments. These arrangements could mean that we end up paying for inventory that we do not need or that is at a higher price than the market. Further, we face significant specific counterparty risk under long-term supply agreements when dealing with suppliers without a long, stable production and financial history. Given the uniqueness of our product, many of our suppliers do not have a long operating history and are private companies that may not have substantial capital resources. In the event any such supplier experiences financial difficulties, it may be difficult or impossible, or may require substantial time and expense, for us to recover any or all of our prepayments. We do not know whether we will be able to maintain long-term supply relationships with our critical suppliers or whether we may secure new long-term supply agreements. Additionally, many of our parts and materials are procured from foreign suppliers, which exposes us to risks including unforeseen increases in costs or interruptions in supply arising from changes in applicable international trade regulations such as taxes, tariffs, or quotas. Any of the foregoing could materially harm our financial condition and our results of operations.

We face supply chain competition, including competition from businesses in other industries, which could result in insufficient inventory and negatively affect our results of operations.

Certain of our suppliers also supply parts and materials to other businesses, including businesses engaged in the production of consumer electronics and other industries unrelated to fuel cells. As a relatively low-volume purchaser of certain of these parts and materials, we may be unable to procure a sufficient supply of the items in the event that our suppliers fail to produce sufficient quantities to satisfy the demands of all of their customers, which could materially harm our financial condition and our results of operations.

We, and some of our suppliers, obtain capital equipment used in our manufacturing process from sole suppliers and, if this equipment is damaged or otherwise unavailable, our ability to deliver our products on time will suffer.

Some of the capital equipment used to manufacture our products and some of the capital equipment used by our suppliers have been developed and made specifically for us, are not readily available from multiple vendors, and would be difficult to repair or replace if they did not function properly. If any of these suppliers were to experience financial difficulties or go out of business or if there were any damage to or a breakdown of our manufacturing equipment and we could not obtain replacement equipment in a timely manner, our business would suffer. In addition, a supplier's failure to supply this equipment in a timely manner with adequate quality and on terms acceptable to us could disrupt our production schedule or increase our costs of production and service.

Our business has been and continues to be adversely affected by the COVID-19 pandemic.

We continue to monitor and adjust as appropriate our operations in response to the COVID-19 pandemic. While we maintain protocols to minimize the risk of COVID-19 transmission within our facilities, there is no guarantee that these measures will prevent an outbreak.

If a significant number of employees are exposed and sent home, particularly in our manufacturing facilities, our production could be significantly impacted. Furthermore, since our manufacturing process involves tasks performed at both our California and Delaware facilities, an outbreak at either facility would have a substantial impact on our overall production, and in such case, our cash flow and results of operations including revenue will be adversely affected.

We have experienced and continue to experience delays from certain vendors and suppliers, which, in turn, could cause delays in the manufacturing and installation of our products and adversely impact our cash flows and results of operations including revenue. Alternative or replacement suppliers may not be available and ongoing delays could affect our business and growth. In addition, new and potentially more contagious variants of the COVID-19 virus may develop, which can lead to future disruptions in the availability or price of these or other parts, and we cannot guarantee that we will succeed in finding alternate suppliers that are able to meet our needs. In addition, international air and sea logistics systems have been and continue to be heavily impacted by the COVID-19 pandemic. Actions by government agencies may further restrict the operations of freight carriers and the operation of ports, which would negatively impact our ability to receive the parts and supplies we need to manufacture our products or to deliver them to our customers.

Our installation operations have also been impacted by the COVID-19 pandemic. For example, our installation projects have experienced delays relating to, among other things, shortages in available labor for design, installation and other work; the inability or delay in our ability to access customer facilities due to shutdowns or other restrictions; the decreased productivity of our general contractors, their sub-contractors, medium-voltage electrical gear suppliers, and the wide range of engineering and construction related specialist suppliers on whom we rely for successful and timely installations; the stoppage of work by gas and electric utilities on which we are critically dependent for hook-ups; and the unavailability of necessary civil and utility inspections as well as the review of our permit submissions and issuance of permits by multiple authorities that have jurisdiction over our activities.

We are not the only business impacted by these shortages and delays, which means that we are subject to risk of increased competition for scarce resources, which may result in delays or increases in the cost of obtaining such services, including increased labor costs and/or fees. An inability to install our products would negatively impact our acceptances, and thereby impact our cash flows and results of operations, including revenue.

As to maintenance operations, if we are delayed in or unable to perform scheduled or unscheduled maintenance, our previously-installed products will likely experience adverse performance impacts including reduced output and/or efficiency, which could result in warranty and/or guaranty claims by our customers and increase our service costs. Further, due to the nature of our products, if we are unable to replace worn parts in accordance with our standard maintenance schedule, we may be subject to increased costs in the future.

We continue to remain in close communication with our manufacturing facilities, employees, customers, suppliers, and partners, but there is no guarantee we will be able to mitigate the impact of this ongoing situation. As the COVID-19 pandemic reaches endemic stages, the future impact on our business operations, supply chain, and demand for our products remains highly dependent on future developments.

Possible new trade tariffs could have a material adverse effect on our business.

Our business is dependent on the availability of raw materials and components for our products, particularly electrical components common in the semiconductor industry, specialty steel products / processing and raw materials. For example, prior tariffs imposed on steel and aluminum imports increased the cost of raw materials for our Energy Servers and decreased the available supply. Additional new trade tariffs or other trade protection measures that are proposed or threatened and the potential escalation of a trade war and retaliation measures could have a material adverse effect on our business, results of operations and financial condition. Consequently, the imposition of tariffs on items imported by us from China or other countries could increase our costs and could have a material adverse effect on our business and our results of operations.

A failure to properly comply with foreign trade zone laws and regulations could increase the cost of our duties and tariffs.

We have established two foreign trade zones, one in California and one in Delaware, through qualification with U.S. Customs and Border Protection, and are approved for “zone to zone” transfers between our California and Delaware facilities. Materials received in a foreign trade zone are not subject to certain U.S. duties or tariffs until the material enters U.S. commerce. We benefit from the adoption of foreign trade zones by reduced duties, deferral of certain duties and tariffs, and reduced processing fees, which help us realize a reduction in duty and tariff costs. However, the operation of our foreign trade zones requires compliance with applicable regulations and continued support of U.S. Customs and Border Protection with respect to the foreign trade zone program. If we are unable to maintain the qualification of our foreign trade zones, or if foreign trade zones are limited or unavailable to us in the future, our duty and tariff costs would increase, which could have an adverse effect on our business and results of operations.

Any significant disruption in the operations at our headquarters or manufacturing facilities could delay the production of our products, which would harm our business and results of operations.

We monitor our fleet of Energy Servers from our headquarters and an offshore location and manufacture our products in a limited number of manufacturing facilities, any of which could become unavailable either temporarily or permanently for any number of reasons, including equipment failure, material supply, public health emergencies, cyber-attacks or catastrophic weather, including extreme weather events or flooding resulting from the effects of climate change, or geologic events. Our headquarters and several of our manufacturing facilities are located in the San Francisco Bay Area, an area that is susceptible to earthquakes, floods and other natural disasters. The occurrence of a natural disaster such as an earthquake, drought, extreme heat, flood, fire, localized extended outages of critical utilities (such as California’s public safety power shut-offs) or transportation systems, or any critical resource shortages could cause a significant interruption in our business, damage or

destroy our facilities, our manufacturing equipment, or our inventory, and cause us to incur significant costs, any of which could harm our business, our financial condition and our results of operations. Our disaster recovery plans and readiness may not be sufficient to restore our headquarters, manufacturing facilities or operations. The insurance we maintain against fires, earthquakes and other natural disasters may not be adequate to cover our losses in any particular case.

Our limited history manufacturing new products, such as our Electrolyzers, makes it difficult to evaluate our future prospects and the challenges we may encounter.

With respect to the manufacture and sale of Electrolyzers, while we have a history of manufacturing and selling our Energy Servers, which are based in part on the same technology, there is little historical basis to make judgments on the capabilities associated with our enterprise, management, and our ability to produce an Electrolyzer specifically. Our ability to generate the profits we expect to achieve from the sale of Electrolyzers will depend, in part, on our ability to respond to market demand and add new manufacturing capacity in a cost-effective manner. In addition, we must continue to increase the efficiency of our manufacturing process to compete successfully.

Risks Related to Government Incentive Programs

Our business currently benefits from the availability of rebates, tax credits and other financial programs and incentives, and the reduction, modification, or elimination of such benefits could cause our revenue to decline and harm our financial results.

We utilize governmental rebates, tax credits, and other financial incentives to lower the effective price of our products to our customers in the United States and Japan, India and the Republic of Korea (collectively, our “Asia Pacific region”).

The U.S. federal government and some state and local governments provide incentives to current and future end users and purchasers of our Energy Servers in the form of rebates, tax credits and other financial incentives, such as system performance payments and payments for renewable energy credits associated with renewable energy generation. Our Energy Servers have qualified for tax exemptions, incentives, or other customer incentives in many states including the states of California, Connecticut, Massachusetts, New Jersey and New York. Some states have utility procurement programs, Renewable Portfolio Standards (“RP Standards”) and/or Clean Energy Standards (“CE Standards”) for which our technologies are eligible. Our Energy Servers are currently installed in eleven U.S. states, each of which may have its own enabling policy framework. Financiers and Equity Investors may also take advantage of these financial incentives, lowering the cost of capital and energy to our customers.

For example, many of our installations in California interconnect with investor-owned utilities on Fuel Cell Net Energy Metering (“FC NEM”) tariffs. FC NEM tariffs will be available for new California installations until December 31, 2023. However, to remain eligible for those FC NEM tariffs, at least some installations currently on those tariffs are likely to be required to meet greenhouse gas emissions standards. Other generally applicable tariffs are available for customers deploying fuel cells, and we are working through the appropriate regulatory channels to establish alternative tariffs as well. If our customers are unable to interconnect under FC NEM tariffs or suitable alternatives, interconnection and tariff costs may increase, and such an increase may negatively impact demand for our products. Additionally, the uncertainty regarding requirements for service under any of these tariffs could negatively impact the perceived value of or risks associated with our products, which could also negatively impact demand.

The U.S. federal government offers certain federal tax benefits, including the Production Tax Credit under Section 45 of the Internal Revenue Code (the “PTC”) and the ITC. The recent passing of the IRA offers a number of new federal tax benefits, many of which we may utilize in the future in connection with the sale of our Energy Servers and Electrolyzers. Our customers, Financiers, and Equity Investors may expect us to be able to facilitate their optimization of the tax benefits available pursuant to the IRA. Each of these federal tax benefits have certain legal and operational requirements. For example, any taxpayer taking the benefit of the ITC must meet certain requirements regarding ownership and use for a period of five years. If the energy property is disposed or otherwise ceases to be qualified investment credit property before expiration of such five-year, it could result in a partial reduction in incentives. There may be uncertainty as to how the new regulations promulgated under the IRA are interpreted. Our failure to either (i) interpret the new requirements under the IRA regarding among other things, prevailing wage, apprenticeship, domestic content, siting in an “energy community,” accurately or (ii) adequately update our supply-chain, manufacturing, installation, and record-keeping processes to meet such requirements, may result a partial or full reduction in the related federal tax benefit and our customers, Financiers, and Equity Investors may require us to indemnify them for certain of such reductions. Change in federal tax benefits over time also may affect our future performance. For example, currently commercial purchasers of fuel cells are eligible to claim the federal bonus depreciation benefit. Unless legislation extends the bonus depreciation deadlines, under current rules it will be phased down beginning in 2023 and will expire at the end of 2026.

Similarly, commercial fuel cell purchasers can claim the ITC. Under current law, fuel cell projects must begin construction on or before December 31, 2024 in order to claim up to 50% ITC, after which part of this benefit will expire unless extended.

Some countries outside the United States also provide incentives to current and future end users and purchasers of our Energy Servers and Electrolyzers. For example, in the Republic of Korea, RP Standards and CE Standards are in place to promote the adoption of renewable, low- or zero-carbon power generation. The Korean RP Standards are scheduled to be replaced in 2023 with the Clean Hydrogen Portfolio Standard (“CHPS”). This may impact the demand for our Energy Servers in the Republic of Korea. Initially, we do not expect the CHPS to require 100% hydrogen as a feedstock for fuel cell projects. The Ministry of Trade, Industry, and Economy is expected to announce details of the CHPS incentive mechanism in 2023. For the years ended December 31, 2022 and 2021, our revenue in the Republic of Korea accounted for 44% and 38% of our total revenue, respectively. Therefore, if sales of our Energy Servers to this market decline in the future, this may have a material adverse effect on our financial condition and results of operations.

Changes in the availability of rebates, tax credits, and other financial programs and incentives could reduce demand for our Energy Servers or future products, impair sales financing, and adversely impact our business results. Additionally, these incentives and procurement programs or obligations may expire on a particular date, end when the allocated funding is exhausted, or be reduced or terminated as a matter of regulatory or legislative policy. The continuation of these programs and incentives depends upon political support which to date has been bipartisan and durable.

In the United States, we rely on tax equity financing arrangements to realize the benefits provided by federal tax benefits and accelerated tax depreciation and in the event these programs are terminated, our financial results could be harmed. We also rely on incentives in the Korean, European and other international markets.

U.S. Equity Investors typically derive a significant portion of their economic returns through tax benefits when they finance an Energy Server. Equity Investors are generally entitled to substantially all of the project’s tax benefits, such as those provided by the ITC and Modified Accelerated Cost Recovery System (“MACRS”) or bonus depreciation. We expect that future Equity Investors will also be interested in taking the benefit of the PTC in connection with financing our Electrolyzers. The number of and available capital from potential Equity Investors is limited, we compete with other energy companies eligible for these tax benefits to access such investors, and the availability of capital from Equity Investors is subject to fluctuations based on factors outside of our control such as macroeconomic trends and changes in applicable taxation regimes. Concerns regarding our limited operating history, lack of profitability and that we are the only party who can perform operations and maintenance on our Energy Servers have made it difficult to attract investors in the past. Our ability to obtain additional financing in the future depends on the continued confidence of banks and other financing sources in our business model, the market for our Energy Servers and Electrolyzers, and the continued availability of tax benefits applicable to our Energy Servers and Electrolyzers, regardless of whether we arrange the financing, or our customers finance the products themselves. In addition, conditions in the general economy and financial and credit markets may result in the contraction of available tax equity financing. Similarly, in international markets such as Korea and Europe, economic benefits applicable to fuel cells may include subsidies for deployment as well as exemptions or reductions from taxes and fees. If as a result of changes to these benefits we, or in some cases our customers, as the case may be, are unable to enter into tax equity or other financing agreements with attractive pricing terms, or at all, neither we nor our customers, may be able to obtain the capital needed to finance the purchase of our Energy Servers or Electrolyzers. Such circumstances could also require us to reduce the price at which we are able to sell our products in the applicable markets and therefore harm our business, our financial condition, and our results of operations.

Risks Related to Legal Matters and Regulations

We are subject to various national, state and local laws and regulations that could impose substantial costs upon us and cause delays in the delivery and installation of our products.

The construction, installation, and operation of our products at a particular site are generally subject to oversight and regulation in accordance with national, state, and local laws and ordinances relating to building codes, safety, environmental and climate protection, domestic content requirements and related matters, as well as national, regional and/or local energy market rules, regulations and tariffs, and typically require various local and other governmental approvals and permits, including environmental approvals and permits, that vary by jurisdiction. In some cases, these approvals and permits change or require periodic renewal. These laws and regulations can affect the markets for our products and the costs and time required for their installation, and may give rise to liability for administrative oversight costs, compliance costs, clean-up costs, property damage, bodily injury, fines, and penalties. Capital and operating expenses needed to comply with the various laws and regulations can be significant, and violations may result in substantial fines and penalties or third-party damages.

It is difficult and costly to track the requirements of every individual authority having jurisdiction over our installations, to design our products to comply with these varying standards, and to obtain all applicable approvals and permits. We cannot predict whether or when all approvals or permits required for a given project will be granted or whether the conditions associated with the approvals or permits will be achievable. The denial of a permit or utility connection essential to a project or the imposition of impractical conditions or excessive costs, such as costs for upgrading utility interconnection equipment, would impair our ability to develop the project. In addition, we cannot predict whether the approval or permitting process will be lengthened due to complexities and appeals. Delay in the review and approval or permitting process for a project can impair or delay our and our customers' abilities to develop that project or may increase the cost so substantially that the project is no longer attractive to us or our customers. Furthermore, unforeseen delays in the review and permitting process could delay the timing of the installation of our products and could therefore adversely affect the timing of the recognition of revenue related to the installation, which could harm our operating results in a particular period. In many cases we contractually commit to performing all necessary installation work on a fixed-price basis, and unanticipated costs associated with approval, permitting and/or compliance expenses may cause the cost of performing such work to exceed our revenue. The costs of complying with all the various laws, regulations and customer requirements, and any claims concerning non-compliance, could have a material adverse effect on our financial condition or our operating results.

In addition, the rules and regulations regarding the production, transportation and storage of hydrogen, including with respect to safety, environmental and market regulations and policies, are in flux and may limit the market for our Energy Servers that operate using hydrogen.

The installation and operation of our products are subject to environmental laws and regulations in various jurisdictions, and there has been in the past and could continue to be uncertainty with respect to both how these laws and regulations may change over time and the interpretation of these environmental laws and regulations to our products, especially as they evolve.

We are committed to compliance with applicable environmental laws and regulations including health and safety standards, and we continuously review the operation of our products for health, safety, and environmental compliance. Our Energy Servers, like other fuel cell technology-based products of which we are aware, produce small amounts of hazardous wastes and air pollutants, and we seek to address these in accordance with applicable regulatory standards. In addition, environmental laws and regulations in the United States, such as the Comprehensive Environmental Response and Compensation and Liability Act, impose liability on several grounds including for the investigation and clean-up of contaminated soil and ground water, impacts to human health and damages to natural resources. If contamination is discovered in the future at properties formerly owned or operated by us or currently owned or operated by us, or properties to which hazardous substances were sent by us, it could result in our liability under environmental laws and regulations. Many of our customers who purchase our products have high sustainability standards, and any environmental non-compliance by us could harm our brand and reputation and impact a current or potential customer's buying decision.

Maintaining environmental compliance can be challenging given the changing patchwork of environmental laws and regulations that prevail at the federal, state, regional, and local level. Most existing environmental laws and regulations preceded the introduction of our innovative fuel cell technology and were adopted to apply to technologies existing at the time (i.e., large coal, oil, or gas-fired power plants). Guidance from these agencies on how certain environmental laws and regulations may or may not be applied to our technology can be inconsistent.

For example, natural gas, which is the primary fuel used in our Energy Servers, contains benzene, which is classified as a hazardous waste if it exceeds 0.5 milligrams per liter. A small amount of benzene found in the public natural gas supply (equivalent to what is present in one gallon of gasoline in an automobile fuel tank, which are exempt from federal regulation) is collected by the gas cleaning units contained in our Energy Servers; these gas cleaning units are typically replaced at customers' sites once every 15 to 36 months. From 2010 to late 2016 and in the regular course of maintenance of the Energy Servers, we periodically replaced the units in our servers relying upon a federal environmental exemption that permitted the handling of such units without manifesting the contents as containing a hazardous waste. Although over the years and with the approval of two states, we believed that we operated appropriately under the exemption, the U.S. Environmental Protection Agency ("EPA") issued guidance for the first time in late 2016 that differed from our belief and conflicted with the state approvals we had obtained. We have complied with the new guidance and, given the comparatively small quantities of benzene produced, we do not anticipate significant additional costs or risks from our compliance with the revised 2016 guidance. In order to put this matter behind us and with no admission of law or fact, we agreed to a consent agreement that was ratified and incorporated by reference into a final order that was entered by an Environmental Appeals Judge for EPA's Environmental Appeals Board in May of 2020. Consistent with the consent agreement and final order, a final payment of approximately \$1.2 million was made.

in the fourth quarter of 2020 and EPA has confirmed the matter is formally resolved. Additionally, a nominal penalty was paid to a state agency under that state's environmental laws relating to the same issue.

Some states in which we operate, including New York, New Jersey and North Carolina, have specific permitting or environmental exemptions for fuel cells. Other states in which we currently operate, including California, have emissions-based requirements, most of which require permits or other notifications for quantities of emissions that are higher than those observed from our Energy Servers. For example, the Bay Area Air Quality Management District in California has an air permit and risk assessment exemption for emissions of chromium in the hexavalent form ("CR+6") that are less than 0.00051 lbs/year. Emissions above this level may trigger the need for a permit. Also, California's Proposition 65 requires notification of the presence of CR+6 unless public exposure is below 0.001 µg/day, the level determined to represent no significant health risk. Since the California standards are more stringent than those in any other state or foreign location in which we have installed Energy Servers to date, we are focused on California's standards. If stricter standards are adopted in other states or jurisdictions or our servers can't meet applicable standards, it could impact our ability to obtain regulatory approval and/or could result in us not being able to operate in a particular local jurisdiction.

These examples illustrate that our technology is moving faster than the regulatory process in many instances and that there are inconsistencies between how we are regulated in different jurisdictions. It is possible that regulators could delay or prevent us from conducting our business in some way pending agreement on, and compliance with, shifting regulatory requirements. Such actions could delay the installation of our products, could result in penalties, could require modification or replacement or could trigger claims of performance warranties and defaults under customer contracts that could require us to repurchase equipment, any of which could adversely affect our business, our financial performance, and our brand and reputation. In addition, new energy or environmental laws or regulations or new interpretations of existing laws or regulations could present marketing, political or regulatory challenges and could require us to upgrade or retrofit existing equipment, which could result in materially increased capital and operating expenses.

As we expand into international markets, we may be subject to local content requirements or pressures which could increase cost or reduce demand for our products.

Certain countries where we conduct or wish to conduct business may impose domestic content requirements (requiring goods, materials, components, services or labor to be supplied from or made in country). Domestic or local content requirements favor domestic industry over foreign competitors and there has been a significant increase in the use of these programs in recent years. For example, in the Republic of Korea, customers and prospective customers may be pressured to select domestic competitors over Bloom.

With respect to our products that run, in part, on fossil fuel, we may be subject to a heightened risk of regulation, to a potential for the loss of certain incentives, and to changes in our customers' energy procurement policies.

The current generation of our Energy Servers that run on natural gas produces nearly 23% fewer carbon emissions than the average U.S. marginal power generation sources that our projects displace. However, the operation of our current Energy Servers does produce some carbon dioxide ("CO₂"), which contributes to global climate change. As such, we may be negatively impacted by CO₂-related changes in applicable laws, regulations, ordinances, rules, or the requirements of the incentive programs on which we and our customers currently rely. Changes (or a lack of change to sufficiently recognize both the risks of climate change and the benefit of our technology as one means to maintain reliable and resilient electric service with a lower greenhouse gas emission profile) in any of the laws, regulations, ordinances, or rules that apply to our installations and new technology could make it more difficult or more costly for us or our customers to install and operate our Energy Servers on particular sites, thereby negatively affecting our ability to deliver cost savings to customers. Certain municipalities in the United States have banned or are considering banning new interconnections with gas utilities, while others have adopted bans that allow new interconnections for non-combustion resources, such as our Energy Servers. Some local municipalities have also banned or are considering banning the use of distributed generation products that utilize fossil fuel. We may face similar challenges in international markets in the future. Additionally, our customers' and potential customers' energy procurement policies may prohibit or limit their willingness to procure our natural gas-fueled Energy Servers. Our business prospects may be negatively impacted if we are prevented from completing new installations or our installations become more costly as a result of laws, regulations, ordinances, or rules applicable to our Energy Servers, or by our customers' and potential customers' energy procurement policies.

Existing regulations and changes to such regulations impacting the electric power industry may create technical, regulatory, and economic barriers, which could significantly reduce demand for our Energy Servers or affect the financial performance of current sites.

The market for electricity generation products is heavily influenced by U.S. federal, state, local, and foreign government laws, regulations and policies as well as by tariffs, internal policies and practices of electric utility providers. These regulations, tariffs and policies often relate to electricity pricing and technical interconnection of customer-owned electricity generation. These regulations, tariffs and policies are often modified and could continue to change, which could result in a significant reduction in demand for our Energy Servers. For example, utility companies commonly charge fees to industrial customers for disconnecting from the electric grid. These fees could change, thereby increasing the cost to our customers of using our Energy Servers and making them less economically attractive.

For example, our project with Delmarva Power & Light Company (the “Delaware Project”) is subject to laws and regulations relating to electricity generation, transmission, and sale in Delaware and at the regional and federal level. A law governing the sale of electricity from the Delaware Project was necessary to implement part of several incentives that Delaware offered to us to build our major manufacturing facility (“Manufacturing Center”) in Delaware. Those incentives have proven controversial in Delaware, in part because our Manufacturing Center, while a significant source of continuing manufacturing employment, has not expanded as quickly as projected. The opposition to the Delaware Project is an example of potentially material risks associated with electric power regulation.

At the federal level in the United States, FERC has authority to regulate under various federal energy regulatory laws, wholesale sales of electric energy, capacity, and ancillary services, and the delivery of natural gas in interstate commerce. Also, several of the tax equity partnerships in which we have an interest are subject to regulation under FERC with respect to market-based sales of electricity, which requires us to file notices and make other periodic filings with FERC, which increases our costs and subjects us to additional regulatory oversight.

Although we generally are not regulated as a utility, U.S. federal, state and local government statutes and regulations concerning electricity and natural gas, as well as organized market rules such as the PJM tariffs affecting the Delaware Project, heavily influence the market for our product and services in the United States. These statutes, regulations, tariffs and market rules often relate to electricity and natural gas pricing, fuel cell net metering, incentives, taxation, and the rules surrounding the interconnection of customer-owned electricity generation for specific technologies. In the United States, governments and market operators frequently modify these statutes, regulations, tariffs and market rules. Governments, often acting through state utility or public service commissions, as well as market operators, change, adopt or approve different utility requirements and rates for commercial and industrial customers on a regular basis. Changes, or in some cases a lack of change, in any of the laws, regulations, tariffs ordinances, or other rules that apply to our installations and new technology could make it more costly for us or our customers to install and operate our products on particular sites and, in turn, could negatively affect our ability to deliver cost savings to customers.

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 in the future become subject to product liability claims. Our Energy Servers are considered high energy systems because they consume or produce flammable fuels and may operate up to 480 volts. High-voltage electricity poses potential shock hazards, while natural gas and hydrogen, associated with both our Energy Servers and our Electrolyzers, are flammable gases and therefore a potentially dangerous fuel capable of causing fires and other harms. Although our Energy Servers are certified to meet ANSI, IEEE, ASME, IEC and NFPA design and safety standards, if our equipment is not properly handled in accordance with our servicing and handling standards and protocols or if there are unforeseen or undiscovered issues with our equipment, there could be a system failure and resulting damage, injury and/or liability.

In either case, these claims could require us to incur significant costs to defend. Furthermore, any successful product liability claim could require us to pay a substantial monetary award. Moreover, a product liability claim could generate substantial negative publicity about us and could materially impede widespread market acceptance and demand for our products, which could harm our brand, our business prospects, and our operating results. Our product liability insurance may 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 business and our financial condition.

Current or future litigation or administrative proceedings could have a material adverse effect on our business, our financial condition and our results of operations.

We have been and continue to be involved in legal proceedings, administrative proceedings, claims, and other litigation that arise in the ordinary course of business. Purchases of our products have also been the subject of litigation. For information regarding pending legal proceedings, please see Part I, Item 3, *Legal Proceedings* and Note 13 - *Commitments and Contingencies* in Part II, Item 8, *Financial Statements and Supplementary Data*. In addition, since our Energy Server and Electrolyzers are new types of products in nascent markets, we have in the past needed and may in the future need to seek the administrative guidance, amendment of existing regulations, or in some cases the development of new regulations, in order to operate our business in some jurisdictions. Such regulatory processes may require public hearings concerning our business, which could expose us to subsequent litigation.

Unfavorable outcomes or developments relating to proceedings to which we are a party or transactions involving our products such as judgments for monetary damages, injunctions, or denial or revocation of permits, could have a material adverse effect on our business, our financial condition, and our results of operations. In addition, settlement of claims could adversely affect our financial condition and our results of operations.

Risks Related to Our Intellectual Property

Our failure to effectively protect and enforce our intellectual property rights may undermine our competitive position, and litigation to protect our intellectual property rights may be costly.

Policing unauthorized use of proprietary technology can be difficult and expensive, and the protective measures we have taken to protect our intellectual property rights, including our trade secrets, may not be sufficient to prevent such use. For example, many of our engineers reside in California where it is not legally permissible to prevent them from working for a competitor. Also, litigation may be necessary to enforce our intellectual property rights, including to protect our trade secrets, or to determine the validity and scope of the proprietary rights of others. Such litigation may result in our intellectual property rights being challenged, limited in scope, or declared invalid or unenforceable. We cannot be certain that the outcome of any litigation will be in our favor, and an adverse determination in any such litigation could impair our intellectual property rights, our business, our prospects, and our brand and reputation.

We rely primarily on patent, trade secret, and trademark laws, and non-disclosure, confidentiality, and other types of contractual restrictions to establish, maintain, and enforce our intellectual property and proprietary rights. However, our rights under these laws and agreements afford us only limited protection and the actions we take to establish, maintain, and enforce our intellectual property rights may not be adequate. For example, our trade secrets and other confidential information could be discovered by or disclosed in an unauthorized manner to third parties. Additionally, our owned or licensed intellectual property rights could be challenged, invalidated, or declared unenforceable in judicial or administrative proceedings, or circumvented, designed around by our competitors, infringed, or misappropriated. Competitors could copy or reverse engineer our products, or develop and market products that are substantially equivalent to or superior to our own. Any of these issues, including the unauthorized use of our intellectual property by others, could reduce our competitive advantage and have a material adverse effect on our business, financial condition, or operating results. In addition, the laws of some countries do not protect intellectual property rights as fully as do the laws of the United States. Many U.S.-based companies have encountered substantial intellectual property infringement in foreign countries, including countries where we sell products. Even if foreign patents are granted, effective enforcement in foreign countries may not be available. We may not be able to effectively protect our intellectual property rights in these markets or elsewhere. If an impermissible use of our intellectual property or trade secrets were to occur, our ability to sell our products at competitive prices may be adversely affected and our business, financial condition, operating results, and cash flows could be adversely affected.

In connection with our expansion into new markets, we may need to develop relationships with new partners, including project developers and/or financiers who may require access to certain of our intellectual property in order to mitigate perceived risks regarding our ability to service their projects over the contracted project duration. If we are unable to come to agreement regarding the terms of such access or find alternative means to address this perceived risk, such failure may negatively impact our ability to expand into new markets. Alternatively, we may be required to develop new strategies for the protection of our intellectual property, which may be less protective than our current strategies and could therefore erode our competitive position.

Our patent applications may not result in issued patents, and our issued patents may not provide adequate protection, either of which may have a material adverse effect on our ability to prevent others from commercially exploiting products similar to ours.

We cannot be certain that our pending patent applications will result in issued patents or that any of our issued patents will afford protection against a competitor. 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 in the future will afford protection against competitors with similar technology. In addition, 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 in other regions. Furthermore, even if these patent applications are accepted and the associated patents issued, some foreign countries provide significantly less effective patent enforcement than the United States.

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, our prospects, and our operating results.

We may need to defend ourselves against claims that we infringed, misappropriated, or otherwise violated the intellectual property rights of others, which may be time-consuming and would cause us to incur substantial costs.

Companies, organizations, or individuals, including our competitors, may hold or obtain patents, trademarks, or other proprietary rights that they may in the future believe are infringed by our products or services. These companies holding patents or other intellectual property rights allegedly relating to our technologies could, in the future, make claims or bring suits alleging infringement, misappropriation, or other violations of such rights, or otherwise assert their rights by seeking royalties or injunctions. Several of the proprietary components used in our Energy Servers have been subjected to infringement challenges in the past. We generally indemnify our customers against claims that the products we supply don't infringe, misappropriate, or otherwise violate third party intellectual property rights, and we therefore may be required to defend our customers against such claims. If a claim is successfully brought in the future and we or our products are determined to have infringed, misappropriated, or otherwise violated a third party's intellectual property rights, we may be required to do one or more of the following:

- cease selling or using our products that incorporate the challenged intellectual property;
- pay substantial damages (including treble damages and attorneys' fees if our infringement is determined to be willful);
- obtain a license from the holder of the intellectual property right, which may not be available on reasonable terms or at all; or
- redesign our products or means of production, which may not be possible or cost-effective.

Any of the foregoing could adversely affect our business, prospects, operating results, and financial condition. In addition, any litigation or claims, whether or not valid, could harm our brand and reputation, result in substantial costs and divert resources and management attention.

We also license technology from third parties and incorporate components supplied by third parties into our products. We may face claims that our use of such technology or components infringes or otherwise violates the rights of others, which would subject us to the risks described above. We may seek indemnification from our licensors or suppliers under our contracts with them, but our rights to indemnification or our suppliers' resources may be unavailable or insufficient to cover our costs and losses.

Risks Related to Our Financial Condition and Operating Results

We have incurred significant losses in the past and we may not be profitable for the foreseeable future.

Since our inception in 2001, we have incurred significant net losses and have used significant cash in our business. As of December 31, 2022, we had an accumulated deficit of \$3.6 billion. We expect to continue to expand our operations domestically and internationally, including by investing in manufacturing, sales and marketing, research and development, staffing, and infrastructure to support our growth. We may continue to incur net losses for the foreseeable future. Our ability to achieve profitability in the future will depend on a number of factors, including our ability to:

- grow our sales volume;
- increase sales to existing customers and attract new customers;
- expand into new geographical markets and industry market sectors;
- attract and retain financing partners who are willing to provide financing for sales on a timely basis, with attractive terms;
- continue to improve the useful life of our fuel cell technology and reduce our warranty servicing costs;
- reduce the cost of producing our products;
- improve the efficiency and predictability of our installation process;
- introduce new products, including products for the hydrogen market;
- improve the effectiveness of our sales and marketing activities; and
- attract and retain key talent in a competitive labor marketplace.

Even if we do achieve profitability, we may be unable to sustain or increase our profitability in the future.

Our financial condition and results of operations and other key metrics are likely to fluctuate on a quarterly basis in future periods, which could cause our results for a particular period to fall below expectations, resulting in a severe decline in the price of our Class A common stock.

Our financial condition and results of operations and other key metrics have fluctuated significantly in the past and may continue to fluctuate in the future due to a variety of factors, many of which are beyond our control. For example, the amount of product revenue we recognize in a given period is materially dependent on the volume of installations of our products in that period and the type of financing used by the customer.

In addition to the other risks described herein, the following factors could also cause our financial condition and results of operations to fluctuate on a quarterly basis:

- the timing of installations, which may depend on many factors such as availability of inventory, product quality or performance issues, local permitting requirements, utility requirements, environmental, health, and safety requirements, weather, availability of labor, the COVID-19 pandemic or such other health emergency, and customer facility construction schedules;
- size of particular installations and number of sites involved in any particular quarter;
- the mix in the type or availability of purchase or financing options used by customers in a period, the geographical mix of customer sales, and the rates of return required by financing parties in such period;
- disruptions in our supply chain;
- whether we are able to structure our sales agreements in a manner that would allow for the product and installation revenue to be recognized upfront;
- delays or cancellations of product installations;
- fluctuations in our service costs, particularly due to unexpected costs and rising labor costs;
- fluctuations in our research and development expense, including periodic increases associated with the pre-production qualification of additional tools as we expand our production capacity;
- the length of the sales and installation cycle for a particular customer;

- the timing and level of additional purchases by new and existing customers, which may be impacted by macroeconomic factors including inflation, interest rates, the recessionary environment, and availability of capital;
- the timing of the development of the market for our new features and products, including our Electrolyzer;
- unanticipated expenses or installation delays associated with changes in governmental regulations, permitting requirements by local authorities at particular sites, utility requirements and environmental, health and safety requirements;
- disruptions in our sales, production, service or other business activities resulting from disagreements with our labor force or our inability to attract and retain qualified personnel; and
- unanticipated changes in federal, state, local, or foreign government incentive programs available for us, our customers, and tax equity financing parties.

Fluctuations in our operating results and cash flow could, among other things, give rise to short-term liquidity issues. In addition, our revenue, key operating metrics, and other operating results in future quarters may fall short of our projections or the expectations of investors and financial analysts, which could have an adverse effect on the price of our Class A common stock.

If we fail to manage our growth effectively, our business and operating results may suffer.

Our current growth and future growth plans may make it difficult for us to efficiently operate our business, challenging us to effectively manage our capital expenditures and control our costs while we expand our operations to increase our revenue. If we experience a significant growth in orders without improvements in automation and efficiency, we may not be able to meet the demands of our growth in a timely manner. We may need additional manufacturing capacity and we and some of our suppliers may need additional capital-intensive equipment. Any growth in manufacturing must include a scaling of quality control as the increase in production increases the possible impact of manufacturing defects. In addition, any growth in the volume of sales of our products may outpace our ability to engage sufficient and experienced personnel to manage the higher number of installations and to engage contractors to complete installations on a timely basis and in accordance with our expectations and standards. Any failure to manage our growth effectively could materially and adversely affect our business, our prospects, our operating results, and our financial condition. Our future operating results depend to a large extent on our ability to manage this expansion and growth successfully.

If we fail to maintain effective internal control over financial reporting in the future, the accuracy and timing of our financial reporting may be adversely affected.

We are required to comply with Section 404 of the Sarbanes-Oxley Act of 2002 (“Sarbanes-Oxley Act”). The provisions of the act require, among other things, that we maintain effective internal control over financial reporting and disclosure controls and procedures. Preparing our financial statements involves a number of complex processes, many of which are done manually and are dependent upon individual data input or review. These processes include, but are not limited to, calculating revenue, deferred revenue and inventory costs. While we continue to automate our processes and enhance our review and put in place controls to reduce the likelihood for errors, we expect that for the foreseeable future many of our processes will remain manually intensive and thus subject to human error if we are unable to implement key operation controls around pricing, spending and other financial processes. For example, prior to our adoption of Section 404B of the Sarbanes-Oxley Act, we identified a material weakness in our internal control over financial reporting at December 31, 2019 related to the accounting for and disclosure of complex or non-routine transactions, which has been remediated. If we are unable to successfully maintain effective internal control over financial reporting, we may fail to prevent or detect material misstatements in our financial statements, in which case investors may lose confidence in the accuracy and completeness of our financial reports. Any failure to maintain effective disclosure controls and procedures or internal control over financial reporting could have a material adverse effect on our business and operating results and cause a decline in the price of our Class A common stock.

Our ability to use our deferred tax assets to offset future taxable income may be subject to limitations that could subject our business to higher tax liability.

We may be limited in the portion of net operating loss carryforwards (“NOLs”) that we can use in the future to offset taxable income for U.S. federal and state income tax purposes. Our NOLs will expire, if unused, beginning in 2022 through 2028. A lack of future taxable income would adversely affect our ability to utilize these NOLs. In addition, under Section 382 of the Internal Revenue Code of 1986, as amended (the “Code”), a corporation that undergoes an “ownership change” is subject to limitations on its ability to utilize its NOLs to offset future taxable income. Changes in our stock ownership as well as other

changes that may be outside of our control could result in ownership changes under Section 382 of the Code, which could cause our NOLs to be subject to certain limitations. Our NOLs may also be impaired under similar provisions of state law. Our deferred tax assets, which are currently fully reserved with a valuation allowance, may expire unutilized or underutilized, which could prevent us from offsetting future taxable income.

Risks Related to Our Liquidity

We must maintain the confidence of our customers in our liquidity, including in our ability to timely service our debt obligations and in our ability support and to grow our business over the long-term.

Currently, we are the only provider able to fully support and maintain our products. If potential customers believe we do not have sufficient capital or liquidity to operate our business over the long-term or that we will be unable to maintain the products acquired from us and provide satisfactory support, customers may be less likely to purchase or lease our products, particularly in light of the significant financial commitment required. In addition, financing sources may be unwilling to provide financing on reasonable terms. Similarly, suppliers, financing partners, and other third parties may be less likely to invest time and resources in developing business relationships with us if they have concerns about the success of our business.

Accordingly, in order to grow our business, we must maintain confidence in our liquidity and long-term business prospects among customers, suppliers, financing partners and other parties. This may be particularly complicated by factors such as:

- our limited operating history at a large scale;
- the size of our debt obligations;
- our lack of profitability;
- unfamiliarity with or uncertainty about our products and the overall perception of the distributed generation market;
- prices for electricity or natural gas in particular markets;
- competition from alternate sources of energy;
- warranty or unanticipated service issues we may experience;
- the environmental consciousness and perceived value of environmental programs to our customers;
- the size of our expansion plans in comparison to our existing capital base and the scope and history of operations;
- the availability and amount of tax incentives, credits, subsidies or other incentive programs; and
- the other factors set forth in this “*Risk Factors*” section.

Several of these factors are largely outside our control, and any negative perceptions about our liquidity or long-term business prospects, even if unfounded, would likely harm our business.

Our indebtedness, and restrictions imposed by the agreements governing our and our PPA Entities’ outstanding indebtedness, may limit our financial and operating activities and may adversely affect our ability to incur additional debt to fund future needs.

As of December 31, 2022, we and our subsidiaries had approximately \$411.6 million of total consolidated indebtedness, of which an aggregate of \$285.8 million represented indebtedness that is recourse to us, \$12.7 million of which is classified as current and \$273.1 million of which is classified as non-current. Of this \$285.8 million in debt, \$61.0 million represented debt under our 10.25% Senior Secured Notes due March 2027, and \$224.8 million represented debt under the \$230.0 million aggregate principal amount of our 2.50% Green Convertible Senior Notes due August 2025 (the “Green Notes”). In addition, our PPA Entities’ (defined herein) outstanding indebtedness of \$125.8 million represented indebtedness that is non-recourse to us. For a description and definition of PPA Entities, please see Part II, Item 7, *Management’s Discussion and Analysis – Purchase and Financing Options – Portfolio Financings*. As of December 31, 2022, we had \$26.0 million in short-term debt and \$385.6 million in long-term debt. Given our substantial level of indebtedness, it may be difficult for us to secure additional debt financing at an attractive cost, which may in turn impact our ability to expand our operations and our product development activities and to remain competitive in the market. Our liquidity needs could vary significantly and may be affected by general economic conditions, industry trends, performance, and many other factors not within our control.

The agreements governing our and our PPA Entities' outstanding indebtedness contain, and other future debt agreements may contain, covenants imposing operating and financial restrictions on our business that limit our flexibility including, among other things:

- borrow money;
- pay dividends or make other distributions;
- incur liens;
- make asset dispositions;
- make loans or investments;
- issue or sell share capital of our subsidiaries;
- issue guaranties;
- enter into transactions with affiliates;
- merge, consolidate or sell, lease or transfer all or substantially all of our assets;
- require us to dedicate a substantial portion of cash flow from operations to the payment of principal and interest on indebtedness, thereby reducing the funds available for other purposes such as working capital and capital expenditures;
- make it more difficult for us to satisfy and comply with our obligations with respect to our indebtedness;
- subject us to increased sensitivity to interest rate increases;
- make us more vulnerable to economic downturns, adverse industry conditions, or catastrophic external events;
- limit our ability to withstand competitive pressures;
- limit our ability to invest in new business subsidiaries that are not PPA Entity-related;
- reduce our flexibility in planning for or responding to changing business, industry and economic conditions; and/or
- place us at a competitive disadvantage to competitors that have relatively less debt than we have.

Our PPA Entities' debt agreements require the maintenance of financial ratios or the satisfaction of financial tests such as debt service coverage ratios and consolidated leverage ratios. Our PPA Entities' ability to meet these financial ratios and tests may be affected by events beyond our control and, as a result, we cannot assure you that we will be able to meet these ratios and tests.

Upon the occurrence of certain events to us, including a change in control, a significant asset sale or merger or similar transaction, our liquidation or dissolution or the cessation of our stock exchange listing, each of which may constitute a fundamental change under the outstanding notes, holders of certain of the notes have the right to cause us to repurchase for cash any or all of such outstanding notes. We cannot provide assurance that we would have sufficient liquidity to repurchase such notes. Furthermore, our financing and debt agreements contain events of default. If an event of default were to occur, the trustee or the lenders could, among other things, terminate their commitments and declare outstanding amounts due and payable and our cash may become restricted. We cannot provide assurance that we would have sufficient liquidity to repay or refinance our indebtedness if such amounts were accelerated upon an event of default. Borrowings under other debt instruments that contain cross-acceleration or cross-default provisions may, as a result, be accelerated and become due and payable as a consequence. We may be unable to pay these debts in such circumstances. We cannot provide assurance that the operating and financial restrictions and covenants in these agreements will not adversely affect our ability to finance our future operations or capital needs, or our ability to engage in other business activities that may be in our interest or our ability to react to adverse market developments.

We may not be able to generate sufficient cash to meet our debt service obligations or our growth plans.

Our ability to generate sufficient cash to make scheduled payments on our debt obligations will depend on our future financial performance and on our future cash flow performance, which will be affected by a range of economic, competitive, and business factors, many of which are outside of our control.

If we do not generate sufficient cash to satisfy our debt obligations, including interest payments, or if we are unable to satisfy the requirement for the payment of principal at maturity or other payments that may be required from time to time under

the terms of our debt instruments, we may have to undertake alternative financing plans such as refinancing or restructuring our debt, selling assets, reducing or delaying capital investments, or seeking to raise additional capital. We cannot provide assurance that any refinancing or restructuring would be possible, that any assets could be sold, or, if sold, of the timing of the sales and the amount of proceeds realized from those sales, that additional financing could be obtained on acceptable terms, if at all, or that additional financing would be available or permitted under the terms of our various debt instruments then in effect.

Furthermore, the ability to refinance indebtedness would depend upon the condition of the finance and credit markets at the time which have in the past been, and may in the future be, volatile. Our inability to generate sufficient cash to satisfy our debt obligations or to refinance our obligations on commercially reasonable terms or on a timely basis would have an adverse effect on our business, our results of operations and our financial condition.

Under some circumstances, we may be required to or elect to make additional payments to our PPA Entities or the Equity Investors.

Our one remaining PPA Entity (PPA V) is structured in a manner such that, other than the amount of any equity investment we have made, we do not have any further primary liability for the debts or other obligations of the PPA Entities. PPA V, which operates Energy Servers for end customers, has significant restrictions on its ability to incur increased operating costs, or could face events of default under debt or other investment agreements if end customers are not able to meet their payment obligations under PPA V or if Energy Servers are not deployed in accordance with the project's schedule. If PPA V experiences unexpected, increased costs such as insurance costs, interest expense or taxes or as a result of the acceleration of repayment of outstanding indebtedness, or if end customers are unable or unwilling to continue to purchase power under this PPA, there could be insufficient cash generated from the project to meet the debt service obligations or to meet any targeted rates of return of Equity Investors. If PPA V fails to make required debt service payments, this could constitute an event of default and entitle the lender to foreclose on the collateral securing the debt or could trigger other payment obligations of the PPA. To avoid this, we could choose to contribute additional capital to PPA V to enable such PPA Entity to make payments to avoid an event of default, which could adversely affect our business or our financial condition.

Risks Related to Our Operations

Expanding operations internationally could expose us to additional risks.

Although we currently primarily operate in the United States, we continue to expand our business internationally. We currently have operations in the Asia Pacific region and in Ireland. Any expansion internationally could subject our business to risks associated with international operations, including:

- increased complexity and costs of managing international operations;
- conformity with applicable business customs, including translation into foreign languages and associated expenses;
- lack of availability of government incentives and subsidies;
- challenges in arranging, and availability of, financing for our customers;
- potential changes to our established business model, including installation and/or service challenges that we may have not encountered before;
- cost of alternative power sources, which could be meaningfully lower outside the United States;
- availability and cost of natural gas;
- variability in gas specifications from jurisdiction to jurisdiction;
- effects of adverse changes in currency exchange rates and rising interest rates;
- difficulties in staffing and managing foreign operations in an environment of diverse culture, laws and regulations, and customers, and the increased travel, infrastructure, and legal and compliance costs associated with international operations;
- our ability to develop and maintain relationships with suppliers and other local businesses;
- compliance with product safety requirements and standards;
- our ability to obtain business licenses that may be needed in international locations to support expanded operations;

- compliance with local laws and regulations and unanticipated changes in local laws and regulations, including tax laws and regulations;
- challenges in managing taxation in cross-border transactions;
- greater difficulties in securing or enforcing our intellectual property rights in certain jurisdictions;
- difficulties in enforcing contracts in certain jurisdictions;
- risk of nationalization or other expropriation of private enterprises;
- trade barriers such as export requirements, tariffs, taxes, local content requirements, anti-dumping regulations and requirements, and other restrictions and expenses, which could increase the effective price of our products and make us less competitive in some countries or increase the costs to perform under our existing contracts;
- difficulties in collecting payments in foreign currencies and associated foreign currency exposure;
- restrictions on repatriation of earnings;
- natural disasters (including as a result of climate change), acts of war or terrorism, regional conflict (including the ongoing war in Ukraine and tensions between China and Taiwan), and public health emergencies, including the COVID-19 pandemic; and
- adverse social, political and economic conditions, including inflation, a recessionary environment, and disruptions in capital markets.

We utilize a sourcing strategy that emphasizes global procurement of materials that has direct or indirect dependencies upon a number of vendors with operations in the Asia Pacific region. Physical, regulatory, technological, market, reputational, and legal risks related to climate change in these regions and globally are increasing in impact and diversity and the magnitude of any short-term or long-term adverse impact on our business or results of operations remains unknown. The physical impacts of climate change, including as a result of certain types of natural disasters occurring more frequently or with more intensity or changing weather patterns, could disrupt our supply chain, result in damage to or closures of our facilities, and could otherwise have an adverse impact on our business, operating results and financial condition. In addition, the war in Ukraine resulted in increased sanctions that affected the price of raw materials used in our products, which could have an adverse impact on our operating results.

Our cross-border transactions and international operations are subject to complex foreign and U.S. laws and regulations, including anti-bribery and corruption laws, antitrust or competition laws, data privacy laws, such as the GDPR, and environmental regulations, among others. In particular, recent years have seen a substantial increase in anti-bribery law enforcement activity by U.S. regulators, and we currently operate and seek to operate in many parts of the world that are recognized as having greater potential for corruption. Violations of any of these laws and regulations could result in fines and penalties, criminal sanctions against us or our employees, prohibitions on the conduct of our business and on our ability to offer our products and services in certain geographies, and significant harm to our business reputation. Our policies and procedures to promote compliance with these laws and regulations and to mitigate these risks may not protect us from all acts committed by our employees or third-party vendors, including contractors, agents and services partners. Additionally, the costs of complying with these laws (including the costs of investigations, auditing and monitoring) could adversely affect our current or future business.

The success of our international sales and operations will depend, in large part, on our ability to anticipate and manage these risks effectively. Our failure to manage any of these risks could harm our international operations, reduce our international sales, and could give rise to liabilities, costs or other business difficulties that could adversely affect our operations and financial results.

Data security breaches and cyberattacks could compromise our intellectual property or other confidential information and cause significant damage to our business, the performance of our fleet of Energy Servers, our brand and our reputation.

We maintain information that is confidential, proprietary or otherwise sensitive in nature on our information technology systems, and on the systems of our third-party providers. This information includes intellectual property, financial information and other confidential information related to us and our employees, prospects, customers, suppliers and other business partners. Additionally, our information technology provides us the ability to remotely control some variables of our Energy Servers; they are connected to and controlled and monitored by our centralized remote monitoring service. We rely on our internal software

applications for many of the functions we use to operate our business generally. Cyberattacks are increasing in frequency and evolving in nature. We and our third-party providers are at risk of attack through use of increasingly sophisticated methods, including malware, phishing and the deployment of artificial intelligence to find and exploit vulnerabilities.

Our information technology systems, and those maintained by our third-party providers, have been in the past, and may be in the future, subjected to attempts to gain unauthorized access, disable, destroy, maliciously control or cause other system disruptions. In some cases, it is difficult to anticipate or to detect immediately such incidents and the damage they caused. While these types of incidents have not had a material effect on our business to date, future incidents involving access to our network or improper use of our systems, or those of our third-parties, could compromise confidential, proprietary or otherwise sensitive information, as well as the operation of our Energy Servers.

While we maintain reasonable and appropriate administrative, technical, and physical safeguards and take preventive and proactive measures to combat known and unknown cybersecurity risks, there is no assurance that such actions will be sufficient to prevent future security breaches and cyberattacks. The security of our infrastructure, including the network that connects our Energy Servers to our remote monitoring service, may be vulnerable to breaches, unauthorized access, misuse, computer viruses, or other malicious code and cyberattacks that could have a material adverse impact on our business and our Energy Servers in the field, and the protective measures we have taken may be insufficient to prevent such events. A breach or failure of our networks or computer or data management systems due to intentional actions such as cyberattacks, including but not limited to ransomware attacks, phishing or denial-of-service attacks, negligence, or other reasons, whether as a result of actions by third-parties or our employees, could seriously disrupt our operations or could affect our ability to control or to assess the performance in the field of our Energy Servers and could result in disruption to our business and potentially legal liability.

In addition, security breaches and cyberattacks could negatively impact our brand and reputation and our competitive position and could result in litigation with third parties, regulatory action and increased remediation costs, any of which could adversely impact our business, our financial condition, and our operating results. Although we maintain insurance coverage that may cover certain liabilities in connection with some security breaches and cyberattacks, we cannot be certain it will be adequate for liabilities actually incurred or that any insurer will not deny coverage of future claims.

If we are unable to attract and retain key employees and hire qualified management, technical, engineering, finance and sales personnel, our ability to compete and successfully grow our business could be harmed.

We believe that our success and our ability to reach our strategic objectives are highly dependent on the contributions of our key management, technical, engineering, finance and sales personnel. The loss of the services of any of our key employees could disrupt our operations, delay the development and introduction of our products and services and negatively impact our business, prospects and operating results. In particular, we are highly dependent on the services of Dr. Sridhar, our Founder, President, Chief Executive Officer and Director, and other certain key employees. None of our key employees are bound by employment agreements for any specific term and we cannot assure you that we will be able to successfully attract and retain senior leadership necessary to grow our business. In addition, many of the accounting rules related to our financing transactions are complex and require experienced and highly skilled personnel to review and interpret the proper accounting treatment with respect these transactions, and if we are unable to recruit and retain personnel with the required level of expertise to evaluate and accurately classify our revenue-producing transactions, our ability to accurately report our financial results may be harmed. There is increasing competition for talented individuals in our industry, and competition for qualified personnel is especially intense in the San Francisco Bay Area where our principal offices are located. Our failure to attract and retain our executive officers and other key management, technical, engineering and sales personnel, could adversely impact our business, our financial condition and our operating results.

Competition for manufacturing employees is intense, and we may not be able to attract and retain the qualified and skilled employees needed to support our business.

We believe part of our success depends on the efforts and talent of our manufacturing employees and our ability to attract, develop, motivate and retain such employees. Competition for manufacturing employees is extremely intense. We may not be able to hire and retain these personnel at compensation levels consistent with our existing compensation and salary structure. Some of the companies with which we compete for experienced employees have greater resources than we have and may be able to offer more attractive terms of employment.

Risks Related to Ownership of Our Common Stock

The stock price of our Class A common stock has been and may continue to be volatile.

The market price of our Class A common stock has been and may continue to be volatile. In addition to factors discussed in this Risk Factors section, the market price of our Class A common stock may fluctuate significantly in response to numerous variables, many of which are beyond our control, including:

- overall performance of the equity markets;
- actual or anticipated fluctuations in our revenue and other operating results;
- changes in the financial projections we may provide to the public or our failure to meet these projections;
- changing market and economic conditions, including a recessionary environment, rising interest rates and inflationary pressures, such as those pressures the market is currently experiencing, which could make our products more expensive or could increase our costs for materials, supplies, and labor;
- failure of securities analysts to initiate or maintain coverage of us, changes in financial estimates by any securities analysts who follow us or our failure to meet these estimates or the expectations of investors;
- the issuance of negative reports from short sellers;
- recruitment or departure of key personnel;
- new laws, regulations, subsidies or credits, or new interpretations of them, applicable to our business;
- negative publicity related to problems in our manufacturing or the real or perceived quality of our products;
- rumors and market speculation involving us or other companies in our industry;
- the failure or distress of competitors in our industry;
- announcements by us or our competitors of significant technical innovations, acquisitions, strategic partnerships or capital commitments;
- lawsuits threatened or filed against us; and
- other events or factors including those resulting from war, natural disasters (including as result of climate change), incidents of terrorism or responses to these events.

In addition, the stock markets have experienced extreme price and volume fluctuations that have affected and continue to affect the market prices of equity securities of many companies. Stock prices of many companies have fluctuated in a manner unrelated or disproportionate to the operating performance of those companies. In the past, stockholders have instituted securities class action litigation following periods of market volatility. We are currently involved in securities litigation, which may subject us to substantial costs, divert resources and the attention of management from our business, and adversely affect our business.

We may issue additional shares of our Class A common stock in connection with any future conversion of the Green Notes or in connection with our transaction with SK ecoplant, which may dilute our existing stockholders and potentially adversely affect the market price of our Class A common stock.

In the event that some or all of the Green Notes are converted and we elect to deliver shares of common stock, the ownership interests of existing stockholders will be diluted, and any sales in the public market of any shares of our Class A common stock issuable upon such conversion could adversely affect the prevailing market price of our Class A common stock. If we were not able to pay cash upon conversion of the Green Notes, the issuance of shares of Class A common stock upon conversion of the Green Notes could depress the market price of our Class A common stock.

In addition, we entered into a Securities Purchase Agreement (the “SPA”) with SK ecoplant in October 2021 that allows SK ecoplant to purchase additional shares of Class A common stock. For additional details on this transaction, see Note 18 - *SK ecoplant Strategic Investment*. The exercise of this option to purchase additional shares may dilute our existing stockholders and potentially adversely affect the market price of our Class A common stock.

The dual class structure of our common stock and the voting agreements among certain stockholders have the effect of concentrating voting control of our Company with KR Sridhar, our Chairman and Chief Executive Officer, and also with those stockholders who held our capital stock prior to the completion of our initial public offering, which limits or precludes your ability to influence corporate matters and may adversely affect the trading price of our Class A common stock.

Our Class B common stock has ten votes per share, and our Class A common stock has one vote per share. As of December 31, 2022, and after giving effect to the voting agreements between KR Sridhar, our Chairman and Chief Executive Officer, and certain holders of Class B common stock, our directors, executive officers, significant stockholders of our common stock, and their respective affiliates collectively held approximately 45% of the voting power of our capital stock. Because of the ten-to-one voting ratio between our Class B and Class A common stock, the holders of our Class B common stock collectively will continue to have the ability to significantly influence the vote on all matters submitted to our stockholders for approval until the earliest to occur of (i) immediately prior to the close of business on July 27, 2023, (ii) immediately prior to the close of business on the date on which the outstanding shares of Class B common stock represent less than five percent (5%) of the aggregate number of shares of Class A common stock and Class B common stock then outstanding, (iii) the date and time or the occurrence of an event specified in a written conversion election delivered by KR Sridhar to our Secretary or Chairman of the Board to so convert all shares of Class B common stock, or (iv) immediately following the date of the death of KR Sridhar. This concentrated control limits or precludes Class A stockholders' ability to influence corporate matters while the dual class structure remains in effect, 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 transaction requiring stockholder approval. In addition, this may prevent or discourage unsolicited acquisition proposals or offers for our capital stock that Class A stockholders may feel are in their best interest as one of our stockholders.

Future transfers by holders of Class B common stock will generally result in those shares converting to Class A common stock, subject to limited exceptions such as certain transfers effected for estate planning purposes. The conversion of Class B common stock to Class A common stock will have the effect, over time, of increasing the relative voting power of those remaining holders of Class B common stock who retain their shares in the long-term.

The S&P Dow Jones and FTSE Russell have implemented changes to their eligibility criteria for inclusion of shares of public companies on certain indices, including the S&P 500, namely, to exclude companies with multiple classes of shares of common stock from being added to such indices. In addition, several shareholder 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 prevent the inclusion of our Class A common stock in such indices and has caused shareholder 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 could result in a less active trading market for our Class A common stock. Any actions or publications by shareholder advisory firms critical of our corporate governance practices or capital structure could also adversely affect the value of our Class A common stock.

We do not intend to pay dividends for the foreseeable future.

We have never declared or paid any cash dividends on our capital stock and do not intend to pay any cash dividends in the foreseeable future. We anticipate that we will retain all of our future earnings for use in the development of our business and for general corporate purposes. Any determination to pay dividends in the future will be at the discretion of our board of directors. Accordingly, investors must rely on sales of their Class A common stock after price appreciation, which may never occur, as the only way to realize any future gains on their investments.

Provisions in our charter documents and under Delaware law could make an acquisition of us more difficult, may limit attempts by our stockholders to replace or remove our current management, may limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers, or employees, and may limit the market price of our Class A common stock.

Provisions in our restated certificate of incorporation and amended and restated bylaws may have the effect of delaying or preventing a change of control or changes in our management. Our restated certificate of incorporation and amended and restated bylaws include provisions that:

- require that our board of directors is classified into three classes of directors with staggered three year terms;
- permit the board of directors to establish the number of directors and fill any vacancies and newly created directorships;

- require super-majority voting to amend some provisions in our restated certificate of incorporation and amended and restated bylaws;
- authorize the issuance of “blank check” preferred stock that our board of directors could use to implement a shareholder rights plan;
- authorize only the chairman of our board of directors, our chief executive officer, or a majority of our board of directors to call a special meeting of stockholders;
- prohibit stockholder action by written consent, which thereby requires all stockholder actions be taken at a meeting of our stockholders;
- establish a dual class common stock structure in which holders of our Class B common stock may have the ability to control the outcome of matters requiring stockholder approval even if they own significantly less than a majority of the outstanding shares of our common stock, including the election of directors and significant corporate transactions such as a merger or other sale of our Company or substantially all of our assets;
- expressly authorize the board of directors to make, alter, or repeal our bylaws; and
- establish advance notice requirements for nominations for election to our board of directors or for proposing matters that can be acted upon by stockholders at annual stockholder meetings.

In addition, our restated certificate of incorporation and our amended and restated bylaws provide that the Court of Chancery of the State of Delaware will be the exclusive forum for: any derivative action or proceeding brought on our behalf; any action asserting a breach of fiduciary duty; any action asserting a claim against us arising pursuant to the Delaware General Corporation Law, our restated certificate of incorporation or our amended and restated bylaws; or any action asserting a claim against us that is governed by the internal affairs doctrine. Our restated certificate of incorporation and our amended and restated bylaws provide that unless we consent in writing to the selection of an alternative forum, the federal district courts of the United States shall be the exclusive forum for the resolution of any complaint asserting a cause of action arising under the Securities Act. These choice of forum provisions may limit a stockholder’s ability to bring a claim in a judicial forum that it finds favorable for disputes with us or any of our directors, officers, or other employees, which thereby may discourage lawsuits with respect to such claims. Alternatively, if a court were to find the choice of forum provision contained in our restated certificate of incorporation and our amended and restated 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, our operating results, and our financial condition.

Moreover, Section 203 of the Delaware General Corporation Law may discourage, delay, or prevent a change in control of our Company. Section 203 imposes certain restrictions on mergers, business combinations, and other transactions between us and holders of 15% or more of our common stock.

Increased scrutiny regarding ESG practices and disclosures could result in additional costs and adversely impact our business, brand and reputation.

Companies across all industries are facing increasing scrutiny relating to their Environmental, Social and Governance (“ESG”) practices and disclosures and institutional and individual investors are increasingly using ESG screening criteria in making investment decisions. Our disclosures on these matters or a failure to satisfy evolving stakeholder expectations for ESG practices and reporting may potentially harm our brand and reputation and impact employee retention and access to capital. In addition, our failure, or perceived failure, to pursue or fulfill our goals, targets, and objectives or to satisfy various reporting standards within the timelines we announce, or at all, could expose us to government enforcement actions and private litigation.

Our ability to achieve any goal or objective, including with respect to environmental and diversity initiatives and compliance with ESG reporting standards, is subject to numerous risks, many of which are outside of our control. Examples of such risks include the availability and cost of technologies and products, evolving regulatory requirements affecting ESG standards or disclosures, our ability to recruit, develop, and retain diverse talent in our labor markets, and our ability to develop and maintain reporting processes and controls that comply with evolving standards for identifying, measuring and reporting ESG metrics. As ESG stakeholder expectations, reporting standards, and disclosure requirements continue to develop, we may incur increasing costs related to ESG monitoring and reporting.

ITEM 1B - UNRESOLVED STAFF COMMENTS

None.

ITEM 2 - PROPERTIES

The table below presents details for our principal properties:

Facility	Location	Approximate Square Footage	Held	Lease Term
Corporate headquarters ¹	San Jose, CA	183,000	Leased	2031
Manufacturing, warehousing, research and development ²	Sunnyvale, CA	110,000	Leased	2023
Research and development	Mountain View, CA	44,000	Leased	2023
Manufacturing, research and development	Fremont, CA	326,000	Leased	*
Manufacturing and warehousing	Newark, DE	172,000	Leased	**
Manufacturing and warehousing ³	Newark, DE	178,000***	Owned	n/a

* Lease terms expire in December 2027, January 2028 and February 2036.

** Lease terms expire in February 2026, December 2026 and April 2027.

*** After expansion the square footage increased from 76,000 sq. ft to 178,000 sq. ft.

¹ Our corporate headquarters is used for administration, research and development, and sales and marketing.

² 50,000 sq. ft. relate to manufacturing facility and 60,000 sq. ft. represent the warehouse.

³ Our first purpose-built Bloom Energy manufacturing center for the fuel cells and Energy Servers assembly, and was designed specifically for copy-exact duplication as we expand, which we believe will help us scale more efficiently.

We lease additional office space as field offices in the United States and office and manufacturing space around the world including in China, India, the Republic of Korea, Taiwan and Japan. To support our growth expectations, we have invested in additional manufacturing capacity at a new facility in Fremont, California. In July 2022 we announced the grand opening of this multi-gigawatt manufacturing facility, representing a \$200 million investment. It followed recent expansion of the company's global headquarters in San Jose as well as the opening of a new research and technical center and a global hydrogen development facility in Fremont. This facility is expected to help us address current capacity constraints and provide for additional capacity necessary for future growth.

ITEM 3 - LEGAL PROCEEDINGS

We are, and from time to time we may become, involved in legal proceedings or subject to claims arising in the ordinary course of our business. For a discussion of legal proceedings, see Note 13 - *Commitments and Contingencies* in Part II, Item 8, *Financial Statements and Supplementary Data*. We are not presently a party to any other legal proceedings that, in the opinion of our management and if determined adversely to us, would individually or taken together have a material adverse effect on our business, operating results, financial condition or cash flows.

ITEM 4 - MINE SAFETY DISCLOSURES

Not applicable.

Part II

ITEM 5 - MARKET FOR REGISTRANT’S COMMON EQUITY, RELATED STOCKHOLDERS MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

Our Class A common stock is listed on The New York Stock Exchange (“NYSE”) under the symbol “BE.” There is no public trading market for our Class B common stock. On February 14, 2023, there were 404 registered holders of record of our Class A common stock, 199 registered holders of record of our Class B common stock and zero registered holders of record of Series A Preferred Stock.

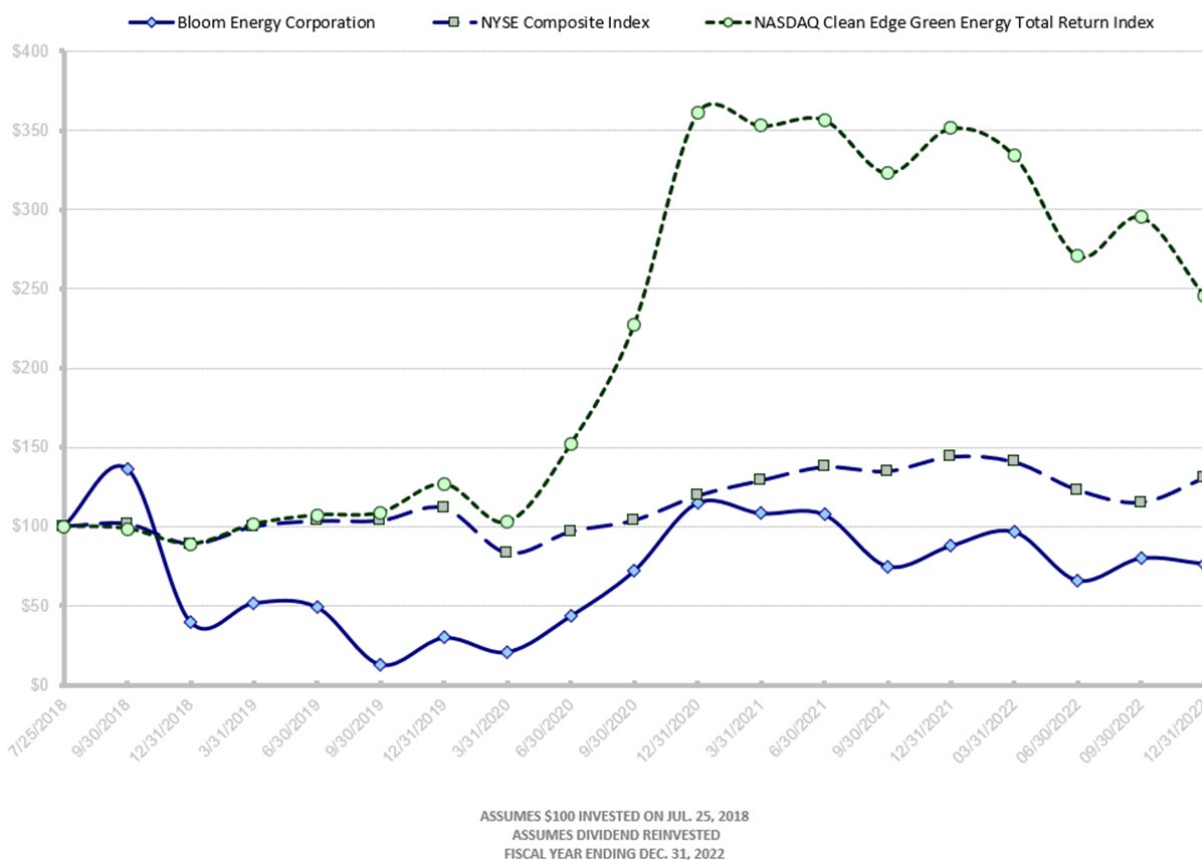
We have not declared or paid any cash dividends on our capital stock and do not intend to pay any cash dividends in the foreseeable future.

STOCK PERFORMANCE GRAPH

The following graph compares the cumulative total return since our initial public offering of our common stock relative to the cumulative total returns of the NYSE Composite Index and the Nasdaq Clean Edge Green Energy Total Return Index. An investment of \$100 (with reinvestment of all dividends, if any) is assumed to have been made in our common stock and in each of the indexes on July 25, 2018 (the date our Class A common stock began trading on the NYSE) and its relative performance is tracked through December 31, 2022.

This graph shall not be deemed to be “filed” with the SEC or subject to the liabilities of Section 18 of the Exchange Act, and the graph shall not be deemed to be incorporated by reference into any prior or subsequent filing by us under the Securities Act. Note that past stock price performance is not necessarily indicative of future stock price performance.

COMPARISON OF CUMULATIVE TOTAL RETURN



<i>(in cumulative \$)</i>	<u>July 25, 2018</u>	<u>September 30, 2018</u>	<u>December 31, 2018</u>	<u>March 31, 2019</u>	<u>June 30, 2019</u>	<u>September 30, 2019</u>	<u>December 31, 2019</u>	<u>March 31, 2020</u>	<u>June 30, 2020</u>	<u>September 30, 2020</u>
Bloom Energy Corporation	\$100.00	\$136.32	\$39.92	\$51.68	\$49.07	\$13.00	\$29.87	\$20.92	\$43.51	\$71.86
NYSE Composite Index	\$100.00	\$101.64	\$88.91	\$99.90	\$103.40	\$103.70	\$111.59	\$83.19	\$96.68	\$103.84
NASDAQ Clean Edge Green Energy Total Return Index	\$100.00	\$98.59	\$88.81	\$101.33	\$107.02	\$108.65	\$126.69	\$102.62	\$151.76	\$227.03
<i>(in cumulative \$)</i>	<u>December 31, 2020</u>	<u>March 31, 2021</u>	<u>June 30, 2021</u>	<u>September 30, 2021</u>	<u>December 31, 2021</u>	<u>March 31, 2022</u>	<u>June 30, 2022</u>	<u>September 30, 2022</u>	<u>December 31, 2022</u>	
Bloom Energy Corporation	\$114.60	\$108.16	\$107.44	\$74.85	\$87.68	\$96.55	\$65.97	\$79.92	\$76.44	
NYSE Composite Index	\$119.39	\$129.00	\$137.52	\$134.88	\$144.07	\$140.75	\$123.10	\$115.21	\$130.60	
NASDAQ Clean Edge Green Energy Total Return Index	\$360.87	\$352.89	\$356.75	\$323.02	\$351.33	\$334.15	\$270.59	\$295.21	\$245.41	

Unregistered Sales of Equity Securities

None.

Issuer's Purchases of Equity Securities

None.

ITEM 6 - [RESERVED]

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

Overview

Description of Bloom Energy

Our mission is to make clean, reliable energy affordable for everyone in the world. We created the first large-scale, commercially viable solid oxide fuel-cell based power generation platform that empowers businesses, essential services, critical infrastructure and communities to responsibly take charge of their energy.

Our technology, invented in the United States, is one of the most advanced electricity and hydrogen producing technologies on the market today. Our fuel-flexible Bloom Energy Servers can use biogas, hydrogen, natural gas, or a blend of fuels to create resilient, sustainable and cost-predictable power at significantly higher efficiencies than traditional, combustion-based resources. In addition, our same solid oxide platform that powers our fuel cells can be used to create hydrogen, which is increasingly recognized as a critically important tool for the decarbonization of the energy economy. Our enterprise customers include some of the largest multinational corporations in the world. We also have strong relationships with some of the largest utility companies in the United States and the Republic of Korea.

At Bloom Energy, we look forward to a net-zero future. Our technology is designed to help enable this future by delivering reliable, low-carbon, electricity in a world facing unacceptable levels of power disruptions. Our resilient platform has kept electricity available for our customers through hurricanes, earthquakes, typhoons, forest fires, extreme heat and grid failures. Unlike traditional combustion power generation, our platform is community-friendly and designed to significantly reduce emissions of criteria air pollutants. We have made tremendous progress towards renewable fuel production through our biogas, hydrogen and electrolyzer programs, and we believe that we are well-positioned as a core platform and fixture in the new energy paradigm to help organizations and communities achieve their net-zero objectives.

We market and sell our Energy Servers primarily through our direct sales organization in the United States, and we also have direct and indirect sales channels internationally. Recognizing that deploying our solutions requires a material financial commitment, we have developed a number of financing options to support sales of our Energy Servers to customers who lack the financial capability to purchase our Energy Servers directly, who prefer to finance the acquisition using third-party financing or who prefer to contract for our services on a pay-as-you-go model.

Our typical target commercial or industrial customer has historically been either an investment-grade entity or a customer with investment-grade attributes, such as size, assets and revenue, liquidity, geographically diverse operations and general financial stability. We have also expanded our product and financing options to below-investment-grade customers and have also expanded internationally to target customers with deployments on a wholesale grid. Given that our customers are typically large institutions with multi-level decision making processes, we generally experience a lengthy sales process.

Strategic Investment

On October 23, 2021, we entered into a Securities Purchase Agreement (the "SPA") with SK ecoplant Co., Ltd. ("SK ecoplant," formerly known as SK Engineering & Construction Co., Ltd.) in connection with our strategic partnership. Pursuant to the SPA, on December 29, 2021, we sold to SK ecoplant 10 million shares of our zero coupon, non-voting redeemable convertible Series A preferred stock, par value \$0.0001 per share (the "RCPS"), at a purchase price of \$25.50 per share for an aggregate purchase price of \$255 million (the "Initial Investment"). On November 8, 2022, each share of Series A Preferred Stock was converted into 10,000,000 shares of Class A Common Stock.

Simultaneous with the execution of the SPA, we and SK ecoplant executed an amendment to the Joint Venture Agreement (the "JVA"), an amendment and restatement to our Preferred Distribution Agreement ("PDA Restatement") and a new Commercial Cooperation Agreement regarding initiatives pertaining to the hydrogen market and general market expansion for the Bloom Energy Server and Bloom Energy Electrolyzer. For additional details about the transaction with SK ecoplant, please see Note 17 - *SK ecoplant Strategic Investment*, and for more information about our joint venture with SK ecoplant, please see Note 12 - *Related Party Transactions* in Part II, Item 8, *Financial Statements and Supplementary Data*.

Certain Factors Affecting our Performance

Global Macroeconomic Conditions

We generally are seeing worsening global macroeconomic conditions, including rising interest rates, recession fears, foreign exchange rate volatility and inflationary pressures, as well as increasing geopolitical instability. These conditions impact our business in several ways. For example, the strengthening U.S. dollar has caused our Energy Servers to become more expensive in several markets outside the United States, which, coupled with worsening global macroeconomic conditions, has the potential to adversely impact demand for our Energy Servers. Our Energy Servers run on a variety of fuels, including natural gas. The rising cost of natural gas, limited availability of natural gas supply, as well as disruptions to the world gas markets has increased the cost of our Energy Servers for the end customers. These conditions also impact our manufacturing and supply chain, as discussed below. To date, the potential impact of these conditions on customer demand largely has been offset by the customers' need for resiliency and a quick time to power that our Energy Server provides as well as the sustainability that both our Energy Servers and Electrolyzers provide.

Supply Chain Constraints

We continue to see effects from global supply chain disruptions and are experiencing supply chain challenges and logistics constraints. While we have not experienced any significant component shortages to date, we are facing pressures from longer lead times, shipping and freight delays, and increased costs of raw materials. These dynamics could worsen as a result of continued increase in geopolitical instability. In addition, the current inflationary environment and war in Ukraine has led to an increase in the price of components and raw materials. In the event we are unable to mitigate the impacts of delays and/or price increases in raw materials, components and freight, it could delay the manufacturing and installation of our Energy Servers and increase the costs of our Energy Servers, which would adversely impact our cash flows and results of operations, including our revenues and gross margin. We expect these supply chain challenges and logistics constraints to continue for the foreseeable future.

Manufacturing and Labor Market Constraints

We are experiencing impacts from the ongoing labor shortage and continue to face challenges in hiring for our manufacturing facilities. While we continue to dedicate resources to supporting our capacity expansion efforts, we are experiencing difficulties with hiring and retention, particularly for our new manufacturing facility in Fremont, California. In addition, the current inflationary environment has led to rising wages and labor rates as well as increased competition for labor. To date, we have been able to mitigate any significant impact to production through a contingent workforce and other measures. In the event we are unable to continue to mitigate the impacts of these challenges, it could delay the manufacturing and installation of our Energy Servers or Electrolyzers and we may be unable to meet customer demand, which could adversely impact our cash flows and results of operations, including our revenues and gross margin. We expect the hiring and retention challenges arising from the labor shortages to continue for the foreseeable future.

Customer Financing Constraints

Our ability to obtain financing for our Energy Servers partly depends on the creditworthiness of our customers, and deterioration of our customers' credit ratings can impact the financing for their use of an Energy Server. We continue to work on obtaining the financing required for our 2023 installations, but if we are unable to secure such financing our revenue, cash flow and liquidity could be materially impacted. We expect that in the United States, the Inflation Reduction Act of 2022 (the "IRA") and the transferability of tax credits, should make the financing market more robust.

Installations and Maintenance of Energy Servers

In 2022, our installation projects have experienced some delays relating to, among other things, shortages in available parts and labor for design, installation and other work, and the inability or delay in our ability to access customer facilities due to shutdowns or other restrictions. Despite the impact on installations during the year ending December 31, 2022 and given our mitigation strategies, we only had a couple instances of a significant delay in the installation of our Energy Servers as a result of supply chain issues that pushed installations out a quarter.

If we are delayed in or unable to perform scheduled or unscheduled maintenance, our previously installed Energy Servers would likely experience adverse performance impacts including reduced output and/or efficiency, which could result in warranty and/or guaranty claims by our customers. Further, due to the nature of our Energy Servers, if we are unable to replace worn parts in accordance with our standard maintenance schedule, we may be subject to increased costs in the future. During the year ended December 31, 2022, we experienced no delays in servicing our Energy Servers.

COVID-19 Pandemic

We continue to monitor and adjust, as appropriate, our operations in response to the COVID-19 pandemic. We maintain protocols to minimize the risk of COVID-19 transmission within our facilities. We will continue to follow CDC and local guidelines. For more information regarding the risks posed to our Company by the COVID-19 pandemic, refer to Part I, Item 1A, Risk Factors – *Risks Related to Our Products and Manufacturing – Our business has been and continues to be adversely affected by the COVID-19 pandemic.*

Environmental, Social and Governance (“ESG”)

We are committed to a goal of providing consistent returns to our shareholders while maintaining a strong sense of good corporate citizenship that places a high value on the environment, welfare of our employees, the communities in which we operate, the customers we serve, and the world as a whole. We believe that prioritizing, improving, and managing our Environmental, Social, and Governance (“ESG”) related risks, opportunities and programs will allow us to better create long-term value for our investors.

We released our 2021 Sustainability Report, Solutions for a Decarbonized Future, (the “Report”) during the first quarter of 2022 using accepted ESG frameworks and standards, including alignment with Sustainability Accounting Standards Board standards and the Task Force on Climate-related Financial Disclosures recommendations. In addition, the Report also utilized certain Global Reporting Initiative standards and was mapped against United Nations Sustainable Development Goals. We plan to issue the Report on an annual basis.

Our mission is to make clean, reliable energy affordable for everyone in the world. To that end, we strive to empower businesses and communities to responsibly take charge of their energy while addressing both the causes and consequences of climate change. We aim to serve our customers with products that are resilient, providing uninterrupted power with predictable pricing over the long-term, while addressing sustainability issues by developing an increasingly broad portfolio of decarbonized solutions.

The Report can be found on our website at <https://www.bloomenergy.com/sustainability>. Website references throughout this document are provided for convenience only, and the content on the referenced websites is not incorporated by reference into this report.

Inflation Reduction Act of 2022 – New and Expanded Production and Tax Credits for Manufacturers and Projects to Support Clean Energy

On August 16, 2022, President Biden signed into law the Inflation Reduction Act of 2022 (the “IRA”). The IRA contains provisions which we expect will have a significant impact on the development and financing of clean energy projects in the United States. The IRA includes the extension and expansion of the Investment Tax Credit (“ITC”) and Production Tax Credit (“PTC”) and the addition of expanded tax credits for other technologies and for manufacturing of clean energy equipment as well as terms allowing parties to more easily monetize the tax credits. The IRA also includes some targeted bonus credit incentives intended to encourage development in low-income communities, the use of domestically produced materials, and compliance with certain labor-related requirements.

The IRA contains several credits and incentive provisions that may be relevant to us, which we have summarized below:

- Section 48 – ITC, which provides a tax credit based on capital investment in a variety of renewable and conventional energy technologies to incentivize investment in new energy resources and more efficient use of fuel, including fuel cell technology;
- Section 48C – Qualified Advanced Energy Project (reenacted), which provides an ITC through a competitive application process administered through the Department of Energy equal to 6% or 30% of the investment with respect to advanced energy projects;
- Section 45V – Clean Hydrogen, which provides a PTC of up to \$3 per kg of qualified clean hydrogen over a 10-year credit period for the production of qualified clean hydrogen at a qualified facility in the US; and
- Section 45Q – Carbon Capture Sequestration, which provides a credit ranging from \$12-\$17 or \$60-\$85 per metric ton based on the amount of carbon oxides captured from a qualified facility over a 12-year period

We believe that the programs and credits included in the IRA align well with our business model and could provide significant benefits with respect to incentivizing the purchase of our current product offerings and technologies. In particular, the new PTC

for qualified clean hydrogen and credit for carbon capture could result in increased demand for commercial solutions to hydrogen production technology and carbon capture, including our solid oxide fuel-cell based electrolyzer and energy server. As Treasury has not yet issued guidance on several of the provisions that applicable to our business, we continue to assess the impact.

Liquidity and Capital Resources

We improved our liquidity in 2022 and at the same time increased our working capital spend. We have entered into new leases intended to maintain sufficient manufacturing facilities to meet anticipated demand in 2023 and beyond, including new product line expansion. In addition, we have also increased the amount spent on working capital to enhance our marketing efforts and to expand into new geographies both domestically and internationally.

On August 10, 2022, pursuant to the SPA, SK ecoplant notified us of its intent to exercise its option to purchase additional shares of our Class A common stock, pursuant to a Second Tranche Exercise Notice (as defined in the SPA). It elected to purchase 13,491,701 shares (the “Second Tranche Shares”) at a purchase price of \$23.05 per share, calculated as a 15% premium to the volume-weighted average closing price of the 20 consecutive trading day period immediately preceding the exercise of the option. The aggregate purchase price approximates cash proceeds to be received by us of \$311.0 million, net of related incremental direct costs of \$0.1 million. The closing of this purchase (the “Second Closing Date”) was expected to be the later of the parties receiving clearance from the U.S. Department of Justice and the Federal Trade Commission of the purchase under the Hart-Scott-Rodino Antitrust Improvements Act of 1974 (the “HSR”), as amended (which was October 7, 2022), and December 6, 2022.

On December 6, 2022, SK ecoplant and Bloom mutually agreed to delay the Second Closing Date until March 31, 2023, unless an earlier date is mutually agreed upon, and subject to and assuming the satisfaction of applicable regulatory clearance.

On August 19, 2022, we completed an underwritten public offering, pursuant to which we issued and sold 13,000,000 shares of Class A common stock at a price of \$26.00 per share (the “Offering”). As a part of the Offering, the underwriters were provided a 30-day option to purchase an additional 1,950,000 shares of our Class A common stock at the same price, less underwriting discounts and commissions, which was exercised contemporaneously with the Offering. The aggregate net proceeds received by us from the Offering were \$371.5 million, after deducting underwriting discounts and commissions of \$16.5 million and incremental costs directly attributable to the Offering of \$0.7 million.

As of December 31, 2022, we had cash and cash equivalents of \$348.5 million. Our cash and cash equivalents consist of highly liquid investments with maturities of three months or less, including money market funds. We maintain these balances with high credit quality counterparties, continually monitor the amount of credit exposure to any one issuer and diversify our investments in order to minimize our credit risk.

As of December 31, 2022, we had \$285.8 million of total outstanding recourse debt, \$125.8 million of non-recourse debt and \$9.5 million of other long-term liabilities. For a complete description of our outstanding debt, please see Note 7 - *Outstanding Loans and Security Agreements* in Part II, Item 8, *Financial Statements and Supplementary Data*.

The combination of our existing cash and cash equivalents is expected to be sufficient to meet our anticipated cash flow needs for at least the next 12 months. If these sources of cash are insufficient to satisfy our near-term or future cash needs, we may require additional capital from equity or debt financings to fund our operations, in particular, our manufacturing capacity, product development and market expansion requirements, to timely respond to competitive market pressures, strategic opportunities or otherwise. We may, from time to time, engage in a variety of financing transactions for such purposes, including factoring our accounts receivable. We may not be able to secure timely additional financing on favorable terms, or at all. The terms of any additional financing may place limits on our financial and operating flexibility. If we raise additional funds through further issuances of equity or equity-linked securities, our existing stockholders could suffer dilution in their percentage ownership of us, and any new securities we issue could have rights, preferences and privileges senior to those of holders of our common stock.

Our future capital requirements will depend on many factors, including our rate of revenue growth, the timing and extent of spending on research and development efforts and other business initiatives, the rate of growth in the volume of system builds, the need for additional manufacturing space, the expansion of sales and marketing activities both in domestic and international markets, market acceptance of our products, our ability to secure financing for customer use of our Energy Servers, the timing of installations, and overall economic conditions. In order to support and achieve our future growth plans, we may need or seek advantageously to obtain additional funding through an equity or debt financing. Failure to obtain this financing or financing in future quarters may affect our results of operations, including our revenues and cash flows.

As of December 31, 2022, the current portion of our total debt was \$26.0 million, of which \$13.3 million was outstanding non-recourse debt.

A summary of our consolidated sources and uses of cash, cash equivalents and restricted cash was as follows (in thousands):

	Years Ended December 31,	
	2022	2021
Net cash (used in) provided by:		
Operating activities	\$ (191,723)	\$ (60,681)
Investing activities	(116,823)	(46,696)
Financing activities	211,364	306,375

Net cash provided by (used in) our PPA Entities, which are incorporated into the consolidated statements of cash flows, was as follows (in thousands):

	Years Ended December 31,	
	2022	2021
PPA Entities ¹		
Net cash provided by PPA operating activities	\$ 245,557	\$ 3,188
Net cash (used in) provided by PPA financing activities	(259,854)	3,231

¹ The PPA Entities' operating and financing cash flows are a subset of our consolidated cash flows and represent the stand-alone cash flows prepared in accordance with U.S. GAAP. Operating activities consist principally of cash used to run the operations of the PPA Entities, the purchase of Energy Servers from us and principal reductions in loan balances. Financing activities consist primarily of changes in debt carried by our PPAs, and payments from and distributions to noncontrolling partnership interests. We believe this presentation of net cash provided by (used in) PPA activities is useful to provide the reader with the impact to consolidated cash flows of the PPA Entities in which we have only a minority interest.

Operating Activities

Our operating activities consisted of net loss adjusted for certain non-cash items plus changes in our operating assets and liabilities or working capital. The increase in cash used in operating activities during the year ended December 31, 2022, as compared to the prior year period of \$60.7 million, was primarily due to the increase in our net loss of \$121.7 million and the increase in working capital of \$141.8 million during the year ended December 31, 2022 due to the timing of revenue transactions and corresponding collections, the increase in accounts receivable triggered by the increase in sales compounded by the decision not to sell our receivables in the fourth quarter of 2022, the increase in inventory levels to support future demand, and the timing of payments to vendors.

Investing Activities

Our investing activities have consisted of capital expenditures, including investments to increase our production capacity. We expect to continue such investing activities as our business grows. Cash used in investing activities of \$116.8 million during the year ended December 31, 2022, an increase of \$70.1 million compared to the prior year period, was primarily due to expenditures on tenant improvements for a newly leased engineering and manufacturing building in Fremont, California, opened in July 2022. We expect to continue to make capital expenditures over the next few quarters to prepare our new manufacturing facility in Fremont, California for production, which includes the purchase of new equipment and other tenant improvements. We intend to fund these capital expenditures from cash on hand as well as cash flow to be generated from operations. We may also evaluate and arrange equipment lease financing to fund these capital expenditures.

Financing Activities

Historically, our financing activities have consisted of borrowings and repayments of debt, proceeds and repayments of financing obligations, distributions paid to noncontrolling interests, contributions from noncontrolling interests, and the proceeds from the issuance of our common stock. Net cash provided by financing activities during the year ended December 31, 2022 was \$211.4 million, a decrease of \$95.0 million compared to prior year period, and was comprised primarily of the repayment of debt related to PPA IIIa and PPA IV of \$100.7 million and other debt of \$19.9 million, repayment of financing

obligations of \$35.5 million, purchase of noncontrolling interest of PPA IV and PPA V of \$12.0 million, and distributions and payments to noncontrolling interests of \$6.9 million, partially offset by the proceeds from our public share offering of \$371.6 million and the proceeds from our issuance of common stock of \$15.3 million.

We believe we have sufficient capital to operate our business over the next 12 months, including the completion of the build out of our manufacturing facilities. Our working capital was strengthened with the initial investment by SK ecoplant and our public offering. In addition, we may still enter the equity or debt market as needed to support the expansion of our business. Please refer to Note 7 - *Outstanding Loans and Security Agreements* in Part II, Item 8, *Financial Statements and Supplementary Data*; and Part I, Item 1A, *Risk Factors – Risks Related to Our Liquidity – Our substantial indebtedness, and restrictions imposed by the agreements governing our and our PPA Entities' outstanding indebtedness, may limit our financial and operating activities and may adversely affect our ability to incur additional debt to fund future needs, and We may not be able to generate sufficient cash to meet our debt service obligations*, for more information regarding the terms of and risks associated with our debt.

Purchase and Financing Options

Overview

In order to appeal to the largest variety of customers, we make available several options to our customers. Both in the United States and abroad, we sell Energy Servers directly to customers. In the United States, we also enable customers' use of the Energy Servers through a power purchase or lease option, made possible through third-party ownership financing arrangements.

Often our offerings take advantage of local incentives. In the United States, our financing arrangements are structured to optimize both federal and local incentives, including the ITC and accelerated depreciation. Internationally, our sales are made primarily to distributors who on-sell to, and install for, customers; these deals are also structured to use local incentives applicable to our Energy Servers. Increasingly, we use trusted installers and other sourcing collaborations in the United States to generate transactions.

Whichever option is selected by a customer in the United States or internationally, the contract structure will include obligations on our part to operate and maintain the Energy Server ("O&M Agreement"). The O&M Agreement may either be (i) for a one-year period, subject to annual renewal at the customer's option, which historically are almost always renewed year over year, or (ii) for a fixed term. In the United States, the contract structure often includes obligations on our part to install the Energy Servers ("Installation Obligations"). Consequently, our transactions may generate revenue from the sale of Energy Servers and electricity, performance of O&M Obligations, and performance of Installation Obligations.

In addition to customary workmanship and materials warranties, as part of the O&M Agreement, we provide warranties and guaranties regarding the efficiency and output of our Energy Servers to the customer and, in certain financing structures, to the financing parties as well. We refer to a "performance warranty" as an obligation to repair or replace the Energy Servers as necessary to return performance of an Energy Server to the warranted performance level. We refer to a "performance guaranty" as an obligation to make a payment to compensate for the failure of the Energy Server to meet the guaranteed performance level. Our obligation to make payments under a performance guaranty is always contractually capped.

Energy Server Sales

There are customers who purchase our Energy Servers directly from us pursuant to customary equipment sales contracts. In connection with the purchase of Energy Servers, the customers also enter into a contract with us for the O&M Obligations. The customer may elect to engage us to provide the Installation Obligations or engage a third-party provider. Internationally, sales often occur through distribution arrangements pursuant to which local construction service providers perform the Installation Obligations, as is the case in the Republic of Korea, and we contract directly with the customer to provide O&M Obligations.

In the past, a customer could enter into a contract for the sale of our Energy Servers and finance that acquisition through a sale-leaseback with a financial institution. In most cases, the financial institution completed its purchase from us immediately after commissioning. We both (i) facilitated this financing arrangement between the financial institution and the customer and (ii) provided ongoing operations and maintenance services for the Energy Servers (such arrangement, a "Traditional Lease"). Our current practices no longer contemplate these types of transactions.

Customer Financing Options

With respect to the third-party financing options in the United States, a customer may choose to contract for the use of our Energy Servers in exchange for a capacity-based payment and, in some cases, an output-based payment based on kw/hour (each, a “Managed Services Agreement”), or for the purchase of electricity generated by the Energy Servers in exchange for a scheduled dollars per kilowatt hour rate (a “Power Purchase Agreement” or “PPA”).

Capacity-based payments in a Managed Services Agreement are required regardless of the level of performance of the Energy Server. Managed Services Agreements are then financed pursuant to a sale-leaseback with a financial institution (a “Managed Services Financing”).

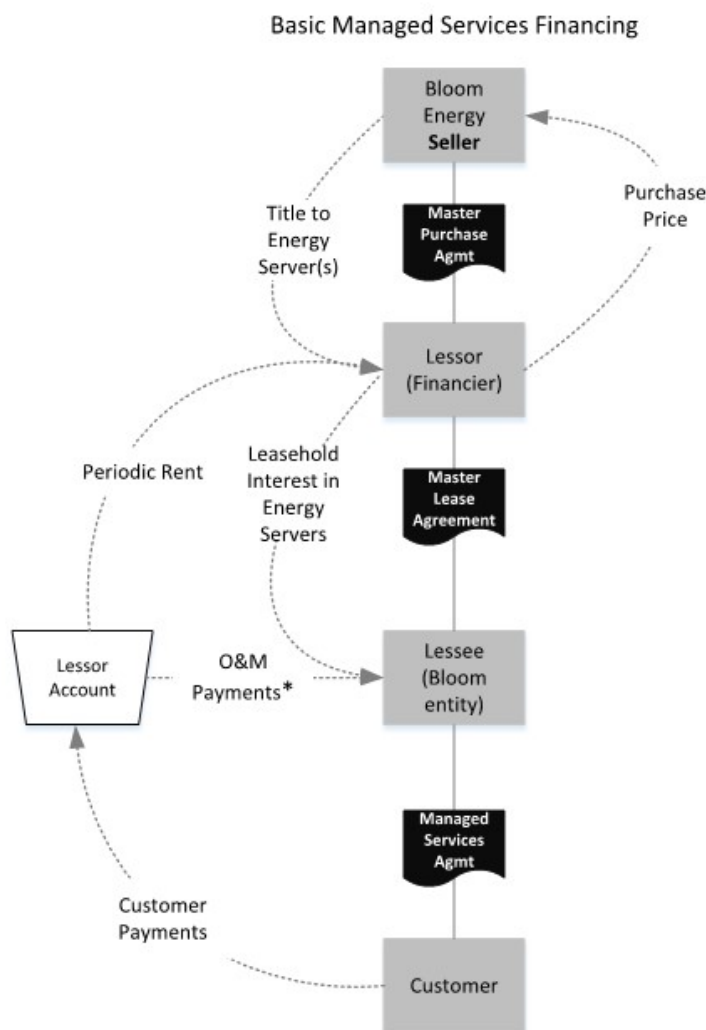
PPAs are typically financed on a portfolio basis. We have financed portfolios through tax equity partnerships, acquisition financings and direct sales to investors (each, a “Portfolio Financing”).

In the United States, our capacity to offer our Energy Servers through either of these financed arrangements depends in large part on the ability of financing parties to optimize the tax benefits associated with an Energy Server, such as the ITC or accelerated depreciation. Interest rate fluctuations, and internationally, currency exchanges fluctuations, may also impact the attractiveness of any financing offerings for our customers. Our ability to finance a Managed Services Agreement or a PPA is also related to, and may be limited by, the creditworthiness of the customer. Additionally, the Managed Services Financing option is limited by a customer’s willingness to commit to making the capacity-based payment to a financing party regardless of performance.

In each of our financing options, we typically perform the functions of a project developer, including identifying end customers and financiers, leading the negotiations of the customer agreements and financing agreements, securing all necessary permitting and interconnections approvals, and overseeing the design and construction of the project up to and including commissioning the Energy Servers. Increasingly, however, we are making sales to third-party developers.

Each of our financing transaction structures is described in further detail below.

Managed Services Financing



* Compensation received from customers is recorded as electricity revenue or service revenue, according to ASC 840 and ASC 842, as applicable. For additional information, see Note 2 – Summary of Significant Accounting Policies in Part II, Item 8, Financial Statements.

Under our Managed Services Financing option, we enter into a Managed Services Agreement with a customer for a certain term. The fixed capacity-based payments made by the customer under the Managed Services Agreement are applied toward our obligation to pay down our periodic lease liability under a sale-leaseback transaction with a financier. We assign all our rights to such fixed payments made by the customer to the financier, as lessor.

Once we enter into a Managed Services Agreement with the customer, and a financier is identified, we sell the Energy Server to the financier, as lessor, who then leases it back to us, as lessee, pursuant to a sale-leaseback transaction. Certain of our sale-leaseback transactions failed to achieve all of the criteria for sale accounting and consequently were re-characterized for accounting purposes. For such re-characterized transactions, the proceeds from the transaction were recognized as a financing obligation within our consolidated balance sheet. For successful sale-and-leaseback transactions, the financier of a Managed Services Agreement typically pays the purchase price for an Energy Server at or around acceptance, and we recognize the fair market value of the Energy Servers sold within product and install revenue and recognize a right-of-use (“ROU”) asset and a lease liability on our consolidated balance sheet. Any proceeds in excess of the fair value of the Energy Servers are recognized as a financing obligation.

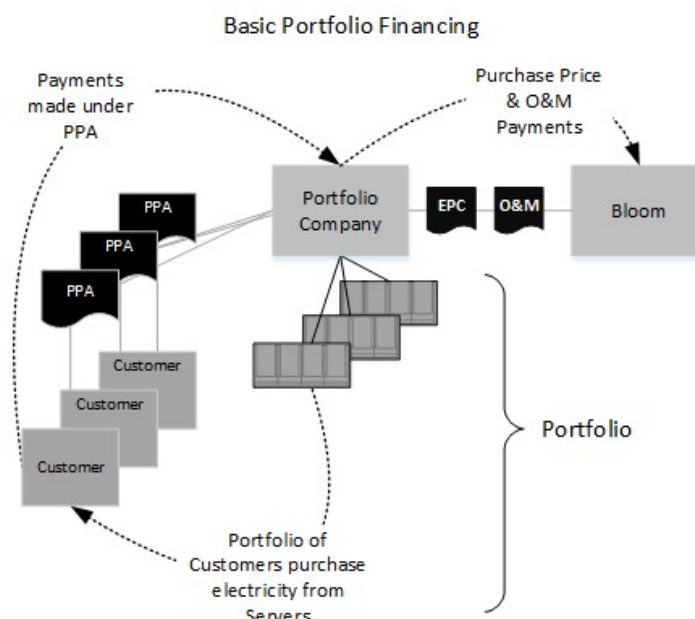
The duration of our current Managed Services Agreement offerings is between five and ten years.

Our Managed Services Agreements typically provide for performance warranties of both the efficiency and output of the Energy Server and may include other warranties depending on the type of deployment. We often structure payments from the customer as a dollars per kilowatt flat payment. In some cases, the structure may also include a variable payment based on the Energy Server's performance or a performance-related set-off. As of December 31, 2022, we had incurred no liabilities due to failure to repair or replace our Energy Servers pursuant to these performance warranties.

Portfolio Financings

In the past, we financed the Energy Servers subject to our PPAs through two types of Portfolio Financings. In one type of transaction, we sold a portfolio of PPAs to a tax equity partnership in which we held a managing member interest (such partnership in which we hold an interest, a "PPA Entity"). In these transactions, we sold the portfolio of Energy Servers to a limited liability project company of which the PPA Entity was the sole member (such portfolio owner, a "Portfolio Company"). Whether an investor, a tax equity partnership, or a single member limited liability company, the Portfolio Company was the entity that directly owned the portfolio. The Portfolio Company sold the electricity generated by the Energy Servers contemplated by the PPAs to the customers. We recognized revenue as the electricity was produced. Our current practices no longer contemplate these types of transactions, and we are in the process of restructuring existing PPA Entities by (i) acquiring the outstanding equity interests of our investors and tax equity partners, (ii) selling 100% of the equity interests in the PPA Entity or the Portfolio Company to a new investor or tax equity partnership in which we do not have an equity interest, and (iii) entering into a new equipment supply and installation agreement and related agreements to upgrade and/or replace the Energy Servers owned by the Portfolio Company. As of December 31, 2022, we only had one PPA Entity remaining known as PPA V. Bloom does not have active and formal plans to sell this entity.

We also finance PPAs through a second type of Portfolio Financing pursuant to which we (i) directly sell a portfolio of PPAs and the Energy Servers to an investor or tax equity partnership or (ii) sell a Portfolio Company, in each case to an investor or tax equity partnership (in either case, an "Equity Investor") in which we do not have an equity interest (a "Third-Party PPA"). Like the other Portfolio Financing structure, the Equity Investor owns the Portfolio Company or the Energy Servers directly, and in each case, sells the electricity generated by the Energy Servers contemplated by the PPAs to the customers. For further discussion, see Note 11 - *Portfolio Financings* in Part II, Item 8, *Financial Statements and Supplementary Data*.



When we finance a portfolio of Energy Servers and PPAs through a Portfolio Financing, we typically enter into, with the Portfolio Company or directly with the Equity Investor, as the case may be, a sale, engineering, procurement and construction agreement (“EPC Agreement”) and a multi-year O&M Agreement, including the provision of performance warranties and guaranties. As owner of the portfolio of PPAs and related Energy Servers, the portfolio owner receives all customer payments generated under the PPAs, the benefits of the ITC and accelerated tax depreciation, and any other available state or local benefits arising out of the ownership or operation of the Energy Servers, to the extent not already allocated to the customer under the PPA.

The sales of our Energy Servers in connection with a Portfolio Financing have many of the same terms and conditions as a direct sale. Payment of the purchase price is generally broken down into multiple installments, which may include payments prior to shipment, upon shipment, delivery, or when the Energy Servers are shipped and delivered and are physically ready for startup and commissioning, and upon acceptance of the Energy Server.

Obligations to Portfolio Companies

Our Portfolio Financings involve many obligations on our part to the Portfolio Company or Equity Investor, as applicable. These obligations are set forth in the applicable EPC Agreement and O&M Agreement, and may include some or all of the following obligations:

- designing, manufacturing, and installing the Energy Servers, and selling such Energy Servers to the Portfolio Company or Equity Investor;
- obtaining all necessary permits and other governmental approvals necessary for the installation and operation of the Energy Servers, and maintaining such permits and approvals throughout the term of the EPC Agreements and O&M Agreements;
- operating and maintaining the Energy Servers in compliance with all applicable laws, permits and regulations;
- satisfying the performance warranties and guaranties set forth in the applicable O&M Agreements; and
- complying with any other specific requirements contained in the PPAs with customers.

In some cases, the EPC Agreement obligates us to repurchase the Energy Server in the event of certain IP infringement claims. In others, a repurchase of the Energy Server is only one optional remedy we have to cure an IP infringement claim. The O&M Agreement grants the Equity Investor the right to obligate us to repurchase the Energy Servers in the event the Energy

Servers fail to comply with the performance warranties and guaranties in the O&M Agreement and we do not cure such failure in the applicable warranty cure period, or that a PPA terminates as a result of any failure by us to perform the obligations in the O&M Agreement. In some of our Portfolio Financings, our obligation to repurchase Energy Servers under the O&M Agreement extends to the entire fleet of Energy Servers sold in the event a systemic failure that affects more than a specified number of Energy Servers.

In some Portfolio Financings, we have also agreed to pay liquidated damages to the applicable Portfolio Company or Equity Investor, as the case may be, in the event of delays in the manufacture, installation and commissioning of our Energy Servers, either in the form of a cash payment or a reduction in the purchase price for the applicable Energy Servers.

Administration of Portfolio Companies

In each of our Portfolio Financings in which we hold an equity interest in the PPA Entity, we perform certain administrative services as managing member, including invoicing the end customers for amounts owed under the PPAs, administering the cash receipts of the Portfolio Company in accordance with the requirements of the financing arrangements, interfacing with applicable regulatory agencies, and other similar obligations. We are compensated for these services on a fixed dollar-per-kilowatt basis.

For those Portfolio Financings with project debt, the Portfolio Company owned by each of our PPA Entities (with the exception of one PPA Entity) incurred debt in order to finance the acquisition of the Energy Servers. The lenders for these transactions are a combination of banks and/or institutional investors. In each case, the debt is secured by all of the assets of the applicable Portfolio Company, such assets being primarily comprised of the Energy Servers and a collateral assignment of each of the contracts to which the Portfolio Company is a party, including the O&M Agreement and the PPAs. As further collateral, the lenders receive a security interest in 100% of the membership interest of the Portfolio Company. The lenders have no recourse to us or to any of the other equity investors in the Portfolio Company for liabilities arising out of the portfolio.

We have determined that we are the primary beneficiary in the remaining PPA V Entity, subject to reassessments performed as a result of upgrade transactions. Accordingly, we consolidate 100% of the assets, liabilities and operating results of the PPA V Entity, including the Energy Servers and lease income, in our consolidated financial statements. We recognize the Equity Investors' share of the net assets of the investment entity as noncontrolling interests in the subsidiary in our consolidated balance sheet. We recognize the amounts that are contractually payable to these investors in each period as distributions to noncontrolling interests in our consolidated statements of changes in stockholders' equity (deficit).

Our consolidated statements of cash flows reflect cash received from the Equity Investors in the PPA V Entity as proceeds from investments by noncontrolling interests in the subsidiary. Our consolidated statements of cash flows also reflect cash paid to these investors as distributions paid to noncontrolling interests in the subsidiary. We reflect any unpaid distributions to these Equity Investors in the PPA V Entity as distributions payable to noncontrolling interests in the subsidiary on our consolidated balance sheets. However, the PPA V Entity is a separate and distinct legal entity, and we may not receive cash or other distributions from the PPA V Entity except in certain limited circumstances and upon the satisfaction of certain conditions, such as compliance with applicable debt service coverage ratios and the achievement of a targeted internal rates of return to the Equity Investors, or otherwise.

For further information about our Portfolio Financings, see Note 11 - *Portfolio Financings* in Part II, Item 8, *Financial Statements and Supplementary Data*.

Delivery and Installation

The transfer of control of our product to our customer based on its delivery and installation has a significant impact on the timing of the recognition of our product and installation revenue. Many factors can cause a lag between the time that a customer signs a contract and our recognition of product revenue. These factors include the number of Energy Servers installed per site, local permitting and utility requirements, environmental, health and safety requirements, weather, customer facility construction schedules, customers' operational considerations and the timing of financing. Many of these factors are unpredictable and their resolution is often outside of our or our customers' control. Customers may also ask us to delay an installation for reasons unrelated to the foregoing, such as, for sales contracts, delays in their financing arrangements. Further, due to unexpected delays, deployments may require unanticipated expenses to expedite delivery of materials or labor to ensure the installation meets the timing objectives. These unexpected delays and expenses can be exacerbated in periods in which we deliver and install a larger number of smaller projects. In addition, if even relatively short delays occur, there may be a significant shortfall between the revenue we expect to generate in a particular period and the revenue that we are able to recognize.

Performance Guarantees

As of December 31, 2022, we had incurred no liabilities due to failure to repair or replace Energy Servers pursuant to any performance warranties made under an O&M Agreement. For O&M Agreements that are subject to renewal, our future service revenue from such agreements are subject to our obligations to make payments for underperformance against the performance guaranties, which are capped at an aggregate total of approximately \$524.5 million (including \$416.6 million related to portfolio financing entities and \$107.9 million related to all other transactions, and include payments for both low output and low efficiency) and our aggregate remaining potential liability under this cap was approximately \$477.9 million against future O&M Agreements subject to renewal. For the year ended December 31, 2022, we made performance guarantee payments of \$12.1 million.

International Channel Partners

India. In India, sales activities are currently conducted by Bloom Energy (India) Pvt. Ltd., our wholly owned subsidiary; however, we continue to evaluate the Indian market to determine whether the use of channel partners would be a beneficial go-to-market strategy to grow our India market sales.

Japan. In Japan, sales were previously conducted pursuant to a Japanese joint venture established between us and subsidiaries of SoftBank Corp., called Bloom Energy Japan Limited (“Bloom Energy Japan”). Under this arrangement, we sold Energy Servers to Bloom Energy Japan and we recognized revenue once the Energy Servers left the port in the United States. Bloom Energy Japan then entered into the contract with the end customer and performed all installation work as well as some of the operations and maintenance work. As of July 1, 2021, we acquired Softbank Corp’s interest in Bloom Energy Japan for a cash payment and are now the sole owner of Bloom Energy Japan.

The Republic of Korea. In 2018, Bloom Energy Japan consummated a sale of Energy Servers in the Republic of Korea to Korea South-East Power Company. Following this sale, we entered into a Preferred Distributor Agreement in November 2018 with SK ecoplant for the marketing and sale of Bloom Energy Servers for the stationary utility and commercial and industrial South Korean power market.

As part of our expanded strategic partnership with SK ecoplant, the parties executed the PDA Restatement in October 2021, which incorporates previously amended terms and establishes: (i) SK ecoplant’s purchase commitments of at least 500MW of power for our Energy Servers between 2022 and 2025 on a take or pay basis (ii) rollover procedures; (iii) premium pricing for product and services; (iv) termination procedures for material breaches; and (v) procedures if there are material changes to the Republic of Korea Hydrogen Portfolio Standard. For additional details about the transaction with SK ecoplant, please see Note 17 - *SK ecoplant Strategic Investment*.

Under the terms of the PDA Restatement, we (or our subsidiary) contract directly with the customer to provide operations and maintenance services for the Energy Servers. We have established a subsidiary in the Republic of Korea, Bloom Energy Korea, LLC, to which we subcontract such operations and maintenance services. The terms of the operations and maintenance are negotiated on a case-by-case basis with each customer but are generally expected to provide the customer with the option to receive services for at least 10 years, and for up to the life of the Energy Servers.

SK ecoplant Joint Venture Agreement. In September 2019, we entered into a joint venture agreement with SK ecoplant to establish a light-assembly facility in the Republic of Korea for sales of certain portions of our Energy Server for the stationary utility and commercial and industrial market in the Republic of Korea. The joint venture is a variable interest entity (“VIE”) of Bloom and we consolidate it in our financial statements as we are the primary beneficiary and therefore have the power to direct activities which are most significant to the joint venture. The joint venture facility became operational in July 2020. Other than a nominal initial capital contribution by Bloom Energy, the joint venture is funded by SK ecoplant. SK ecoplant, who currently acts as a distributor for our Energy Servers for the stationary utility and commercial and industrial market in the Republic of Korea, is our primary customer for the products assembled by the joint venture. In October 2021, as part of our expanded strategic partnership with SK ecoplant, the parties agreed to amend the JVA to increase the scope of assembly work done in the joint venture facility. The joint venture was further developed in 2022.

Comparison of the Years Ended December 31, 2022 and 2021

A discussion regarding our results of operations for 2022 compared to 2021 is presented in this section. A discussion of our results of operations for 2021 compared to 2020 can be found under Item 7 of Part II of our Annual Report on Form 10-K for the year ended December 31, 2021.

Key Operating Metrics

In addition to the measures presented in the consolidated financial statements, we use certain key operating metrics below to evaluate business activity, to measure performance, to develop financial forecasts and to make strategic decisions:

- **Product accepted** - the number of customer acceptances of our Energy Servers in any period. We recognize revenue when an acceptance is achieved. We use this metric to measure the volume of deployment activity. We measure each Energy Server manufactured, shipped and accepted in terms of 100 kilowatt equivalents.
- **Product costs of product accepted in the period (per kilowatt)** - the average unit product cost for the Energy Servers that are accepted in a period. We use this metric to provide insight into the trajectory of product costs and, in particular, the effectiveness of cost reduction activities.
- **Period costs of manufacturing expenses not included in product costs** - the manufacturing and related operating costs that are incurred to procure parts and manufacture Energy Servers that are not included as part of product costs. We use this metric to measure any costs incurred to run our manufacturing operations that are not capitalized (i.e., absorbed, such as stock-based compensation) into inventory and therefore, expensed to our consolidated statement of operations in the period that they are incurred.
- **Installation costs on product accepted (per kilowatt)** - the average unit installation cost for Energy Servers that are accepted in a given period. This metric is used to provide insight into the trajectory of install costs and, in particular, to evaluate whether our installation costs are in line with our installation billings.

We no longer consider billings related to our products to be a key operating metric. Billings as a metric was introduced to provide insight into our customer contract billings as differentiated from revenue when a significant portion of those customer contracts had product and installation billings recognized as electricity revenue over the term of the contract instead of at the time of delivery or acceptance. Today, a very small portion of our customer contracts has revenue recognized over the term of the contract, and thus it is no longer a meaningful metric for us.

Product Acceptances

We use acceptances as a key operating metric to measure the volume of our completed Energy Server installation activity from period to period. Acceptance typically occurs upon transfer of control to our customers, which depending on the contract terms is when the system is shipped and delivered to our customer, when the system is shipped and delivered and is physically ready for startup and commissioning, or when the system is shipped and delivered and is turned on and producing power.

The product acceptances in the years ended December 31, 2022 and 2021 were as follows:

	Years Ended December 31,		Change	
	2022	2021	Amount	%
Product accepted during the period (in 100 kilowatt systems)	2,281	1,879	402	21.4 %

Product accepted for the year ended December 31, 2022 compared to the same period in 2021 increased by 402 systems, or 21.4%. Acceptance volume increased as demand increased for the Energy Servers.

	Years Ended December 31,		Change	
	2022	2021	Amount	%
Megawatts accepted, net	228	188	40	21.3 %

Megawatts accepted, net, increased approximately 40 megawatts, or 21.3%, for the year ended December 31, 2022 compared to the year ended December 31, 2021. The increase in acceptances achieved from December 31, 2021 to December 31, 2022 was added to our installed base and, therefore, increased our megawatts accepted, net, from 188 megawatts to 228 megawatts.

Purchase Options

Our customers have several purchase options for our Energy Servers. The portion of acceptances attributable to each purchase option in the years ended December 31, 2022 and 2021 was as follows:

	Years Ended December 31,	
	2022	2021
Direct Purchase (including Third-Party PPAs and International Channels)	98 %	96 %
Managed Services	2 %	4 %
	100 %	100 %

The portion of total revenue attributable to each purchase option in the years ended December 31, 2022 and 2021 was as follows:

	Years Ended December 31,	
	2022	2021
Direct Purchase (including Third-Party PPAs and International Channels)	91 %	84 %
Traditional Lease	1 %	1 %
Managed Services	5 %	10 %
Portfolio Financings	3 %	5 %
	100 %	100 %

Costs Related to Our Products

Total product related costs for the years ended December 31, 2022 and 2021 was as follows:

	Years Ended December 31,		Change	
	2022	2021	Amount	%
Product costs of product accepted in the period	\$2,453/kW	\$2,346/kW	\$107/kW	4.6 %
Period costs of manufacturing related expenses not included in product costs (in thousands)	\$ 56,630	\$ 30,762	\$ 25,868	84.1 %
Installation costs on product accepted in the period	\$456/kW	\$587/kW	-\$131/kW	(22.3)%

Product costs related to products accepted for the year ended December 31, 2022 compared to the same period in 2021 increased by approximately \$107 per kilowatt, driven by some of the cost pressures seen in the external inflationary environment with commodity pricing and logistics costs increasing significantly from the prior year period. Our ongoing cost reduction efforts to reduce material costs, labor and overhead through improved automation of our manufacturing facilities, our increased facility utilization and our ongoing material cost reduction programs with our vendors continued but were offset by the temporary increases in product costs that we experienced.

Period costs of manufacturing related expenses for the year ended December 31, 2022 compared to the same period in 2021 increased by approximately \$25.9 million, primarily as a result of costs incurred to support capacity expansion efforts which are expected to be brought online in future periods.

Installation costs on product accepted for the year ended December 31, 2022 compared to the same period in 2021 decreased by approximately \$131 per kilowatt. For the year ended December 31, 2022, the decrease in installation costs was driven by the change in the mix of sites requiring Bloom installation. Each customer site is different and installation costs can vary due to a number of factors, including site complexity, size, and location of gas, among other factors. As such, installation on a per kilowatt basis can vary significantly from period to period. In addition, some customers handle their own installation for which we have little to no installation costs.

Results of Operations

A discussion regarding the comparison of our financial condition and results of operations for the years ended December 31, 2022 and 2021 is presented below.

Revenue

	Years Ended December 31,		Change	
	2022	2021	Amount	%
	(dollars in thousands)			
Product	\$ 880,664	\$ 663,512	\$ 217,152	32.7 %
Installation	92,120	96,059	(3,939)	(4.1)%
Service	150,954	144,184	6,770	4.7 %
Electricity	75,387	68,421	6,966	10.2 %
Total revenue	<u>\$ 1,199,125</u>	<u>\$ 972,176</u>	<u>\$ 226,949</u>	<u>23.3 %</u>

Total Revenue

Total revenue increased by \$226.9 million, or 23.3%, for the year ended December 31, 2022 as compared to the prior year period. This increase was primarily driven by a \$217.2 million increase in product revenue, a \$7.0 million increase in electricity revenue, and a \$6.8 million increase in service revenue, offset by a \$3.9 million decrease in installation revenue.

Product Revenue

Product revenue increased by \$217.2 million, or 32.7%, for the year ended December 31, 2022 as compared to the prior year period. The product revenue increase was driven primarily by a 21.4% increase in product acceptances resulting from higher demand in existing markets, increase in product volume and improved pricing driven by the PPA IV Upgrade and PPA IIIa Upgrade (with revenue recognized of \$102.3 million and \$49.8 million, respectively).

Installation Revenue

Installation revenue decreased by \$3.9 million, or (4.1)%, for the year ended December 31, 2022 as compared to the prior year period. This decrease in installation revenue was driven by the change in mix of product acceptances requiring installations by us, as fewer sites had installation costs in fiscal year 2022, offset by the revenue recognized from the PPA IIIa Upgrade of \$4.6 million.

Service Revenue

Service revenue increased by \$6.8 million, or 4.7%, for the year ended December 31, 2022 as compared to the prior year period. This increase was primarily due to the 21.4% increase in acceptances plus the maintenance contract renewals associated with the increase in our fleet of Energy Servers, partially offset by the impact of product performance guarantees. We expect our service revenue to grow in future periods.

Electricity Revenue

Electricity revenue includes both revenue from contracts with customers and revenue from contracts that contain leases.

Electricity revenue increased by \$7.0 million, or 10.2%, for the year ended December 31, 2022 as compared to the prior year period primarily due to the increase in installed units as a result of the increase of \$7.1 million in Managed Services transactions recorded in the second half of fiscal year 2021.

Cost of Revenue

	Years Ended December 31,		Change	
	2022	2021	Amount	%
	(dollars in thousands)			
Product	\$ 616,178	\$ 471,654	\$ 144,524	30.6 %
Installation	104,111	110,214	(6,103)	(5.5)%
Service	168,491	148,286	20,205	13.6 %
Electricity	162,057	44,441	117,616	264.7 %
Total cost of revenue	<u>\$ 1,050,837</u>	<u>\$ 774,595</u>	<u>\$ 276,242</u>	<u>35.7 %</u>

Total Cost of Revenue

Total cost of revenue increased by \$276.2 million, or 35.7%, for the year ended December 31, 2022 as compared to the prior year period primarily driven by a \$144.5 million increase in cost of product revenue, a \$117.6 million increase in cost of electricity revenue, and a \$20.2 million increase in cost of service revenue, offset by a \$6.1 million decrease in cost of installation revenue. The total cost of revenue increase was primarily driven by the write-off of old Energy Servers of \$44.8 million and \$64.0 million as a result of the PPA IIIa Upgrade and PPA IV Upgrade, respectively, increased freight charges and other supply chain-related pricing pressures and costs incurred to support capacity expansion efforts which are expected to be brought online in future periods. This increase was partially offset by our ongoing cost reduction efforts to reduce material costs in conjunction with our suppliers and our reduction in labor and overhead costs through increased volume, improved processes and automation at our manufacturing facilities.

Cost of Product Revenue

Cost of product revenue increased by \$144.5 million, or 30.6%, for the year ended December 31, 2022 as compared to the prior year period. The cost of product revenue increase was driven primarily by a 21.4% increase in product acceptances, the sale of new Energy Servers of \$21.8 million and \$37.4 million as a result of the PPA IIIa Upgrade and PPA IV Upgrade, respectively, increased freight charges and other supply chain-related pricing pressures and costs incurred in support of upcoming capacity expansion efforts. This increase was partially offset by our ongoing cost reduction efforts to reduce material costs in conjunction with our suppliers and our reduction in labor and overhead costs through increased volume, improved processes and automation at our manufacturing facilities.

Cost of Installation Revenue

Cost of installation revenue decreased by \$6.1 million, or (5.5)%, for the year ended December 31, 2022 as compared to the prior year period. This decrease was driven by the change in mix of product acceptances requiring Bloom Energy installations, as fewer sites had installation costs in the year ended December 31, 2022, partially offset by installation of the new Energy Servers as a result of the PPA IIIa Upgrade of \$3.2 million.

Cost of Service Revenue

Cost of service revenue increased by \$20.2 million, or 13.6%, for the year ended December 31, 2022 as compared to the prior year period. This increase was primarily due to the deployment of field replacement units, partially offset by cost reductions and our actions to proactively manage fleet optimizations.

Cost of Electricity Revenue

Cost of electricity revenue includes both cost of revenue from contracts with customers and cost of revenue from contracts that contain leases.

Cost of electricity revenue increased by \$117.6 million, or 264.7%, for the year ended December 31, 2022 as compared to the prior year period, primarily due to the write-off of old Energy Servers of \$44.8 million and \$64.0 million as a result of the PPA IIIa Upgrade and PPA IV Upgrade, respectively, and an increase in installed units driven by Managed Services transactions recorded in the second half of fiscal year 2021.

Gross Profit and Gross Margin

	Years Ended December 31,		Change
	2022	2021	
	(dollars in thousands)		
Gross profit:			
Product	\$ 264,486	\$ 191,858	\$ 72,628
Installation	(11,991)	(14,155)	\$ 2,164
Service	(17,537)	(4,102)	\$ (13,435)
Electricity	(86,670)	23,980	\$ (110,650)
Total gross profit	<u>\$ 148,288</u>	<u>\$ 197,581</u>	<u>\$ (49,293)</u>
Gross margin:			
Product	30 %	29 %	
Installation	(13)%	(15)%	
Service	(12)%	(3)%	
Electricity	(115)%	35 %	
Total gross margin	12 %	20 %	

Total Gross Profit

Gross profit decreased by \$49.3 million in the year ended December 31, 2022 as compared to the prior year period, primarily driven by the \$110.7 million decrease in electricity gross profit primarily due to the write-off of old Energy Servers of \$44.8 million and \$64.0 million as a result of the PPA IIIa Upgrade and the PPA IV Upgrade, respectively; the \$13.4 million decrease in service gross profit due to a 21.4% increase in acceptances in addition to maintenance contract renewals associated with the increase in our fleet of Energy Servers. This decrease was partially offset by our ongoing cost reduction efforts to reduce material costs in conjunction with our suppliers and our reduction in labor and overhead costs through increased volume, improved processes and automation at our manufacturing facilities, as well as increase in product gross of profit of \$28.0 million and \$64.9 million as a result of the PPA IIIa Upgrade and the PPA IV Upgrade, respectively.

Product Gross Profit

Product gross profit increased by \$72.6 million in the year ended December 31, 2022 as compared to the prior year period. The improvement is driven by the 21.4% increase in product acceptances, gross profit from the PPA IIIa Upgrade and PPA IV Upgrade of \$28.0 million and \$64.9 million, respectively, and our ongoing cost reduction efforts to reduce material costs in conjunction with our suppliers and our reduction in labor and overhead costs through increased volume, improved processes and automation at our manufacturing facilities, partially offset by increased freight charges and other supply chain-related pricing pressures and costs incurred to support capacity expansion efforts which are expected to be brought online in future periods.

Installation Gross Loss

Installation gross loss decreased by \$2.2 million in the year ended December 31, 2022 as compared to the prior year period driven by the change in site mix and other site related factors such as site complexity, size, local ordinance requirements and location of the utility interconnect.

Service Gross Loss

Service gross loss increased by \$13.4 million in the year ended December 31, 2022 as compared to the prior year period. This was primarily due to deployments of field replacement units and the impact of product performance guarantees offset by cost reductions and our actions to proactively manage fleet optimizations.

Electricity Gross (Loss) Profit

Electricity gross profit decreased by \$110.7 million in the year ended December 31, 2022 as compared to the prior year period, mainly due to the impairment of old Energy Servers of \$44.8 million and \$64.0 million as a result of the PPA IIIa Upgrade and the PPA IV Upgrade, respectively, partially offset by the increase of \$7.1 million in Managed Services transactions recorded in the second half of fiscal year 2021.

Operating Expenses

	Years Ended December 31,		Change	
	2022	2021	Amount	%
	(dollars in thousands)			
Research and development	\$ 150,606	\$ 103,396	\$ 47,210	45.7 %
Sales and marketing	90,934	86,499	4,435	5.1 %
General and administrative	167,740	122,188	45,552	37.3 %
Total operating expenses	<u>\$ 409,280</u>	<u>\$ 312,083</u>	<u>\$ 97,197</u>	31.1 %

Total Operating Expenses

Total operating expenses increased by \$97.2 million in the year ended December 31, 2022 as compared to the prior year period. This increase was primarily attributable to our investment in business development and front-end sales both in the United States and internationally, investment in brand and product management, and our continued investment in our R&D capabilities to support our technology roadmap.

Research and Development

Research and development expenses increased by \$47.2 million in the year ended December 31, 2022 as compared to the prior year period. This increase was primarily due to increases in employee compensation and benefits of \$30.2 million to expand our employee base in order to support our technology roadmap, including our hydrogen, electrolyzer, marine and biogas solutions.

Sales and Marketing

Sales and marketing expenses increased by \$4.4 million in the year ended December 31, 2022 as compared to the prior year period. This increase was primarily driven by increases in employee compensation and benefits of \$14.2 million to expand our U.S. and international sales force, increased investment in brand and product management, partially offset by a decrease in outside services.

General and Administrative

General and administrative expenses increased by \$45.6 million in the year ended December 31, 2022 as compared to the prior year period. This increase was primarily driven by increases in employee compensation and benefits of \$29.7 million, an increase of \$4.7 million related to the PPA IV Upgrade due to the write-off of prepaid insurance, an increase in professional services of \$3.9 million, an increase in factoring fees of \$3.3 million, and an increase in rent expense of \$3.3 million.

Stock-Based Compensation

	Years Ended December 31,		Change	
	2022	2021	Amount	%
	(dollars in thousands)			
Cost of revenue	\$ 18,955	\$ 13,811	\$ 5,144	37.2 %
Research and development	33,956	20,274	\$ 13,682	67.5 %
Sales and marketing	18,651	17,085	\$ 1,566	9.2 %
General and administrative	42,404	24,962	\$ 17,442	69.9 %
Total stock-based compensation	<u>\$ 113,966</u>	<u>\$ 76,132</u>	<u>\$ 37,834</u>	<u>49.7 %</u>

Total stock-based compensation increased by \$37.8 million for the year ended December 31, 2022 compared to the prior year period, primarily driven by the efforts to expand our employee base across all of the Company's functions.

Other Income and Expense

	Years Ended December 31,		Change	
	2022	2021	Amount	%
	(dollars in thousands)			
Interest income	\$ 3,887	\$ 262	\$ 3,625	
Interest expense	(53,493)	(69,025)	15,532	
Other income (expense), net	4,998	(8,139)	13,137	
Loss on extinguishment of debt	(8,955)	—	(8,955)	
Gain (loss) on revaluation of embedded derivatives	566	(919)	1,485	
Total	<u>\$ (52,997)</u>	<u>\$ (77,821)</u>	<u>\$ 24,824</u>	

Interest Income

Interest income is derived from investment earnings on our cash balances, primarily from money market funds. Interest income increased by \$3.6 million for the year ended December 31, 2022 as compared to the prior year period, primarily due to an increase in the rates of interest earned on our cash balances.

Interest Expense

Interest expense is from our debt held by third parties. Interest expense decreased by \$15.5 million for the year ended December 31, 2022 as compared to the prior year period. This decrease was primarily as a result of repayments of the 7.5% Term Loan due September 2028 and 6.07% Senior Secured Notes due March 2030, as well as refinancing our notes at a lower interest rate.

Other Income (Expense), net

Other income (expense), net, is primarily derived from investments in joint ventures, plus the impact of foreign currency translation. Other income (expense), net increased by \$13.1 million for the year ended December 31, 2022 as compared to the prior year period, due to the gain on the revaluation of the option to purchase Class A common stock upon receipt of the notice of exercise from SK ecoplant on August 10, 2022 of \$9.0 million, partially offset by a loss on remeasurement of \$3.5 million of our equity investment in the Bloom Energy Japan joint venture and the joint venture in China, an increase in loss on foreign currency translation of \$0.7 million, as well as loss recognized on interest rate swaps of \$10.9 million in 2021 which were settled as of December 31, 2021.

Loss on Extinguishment of Debt

Loss on extinguishment of debt increased by \$9.0 million for the year ended December 31, 2022 as compared to the prior year period, due to the repayment of 7.5% Term Loan due September 2028 and 6.07% Senior Secured Notes due March 2030 as part of the PPA IIIa Upgrade and PPA IV Upgrade, respectively.

Gain (Loss) on Revaluation of Embedded Derivatives

Gain (loss) on revaluation of embedded derivatives is derived from the change in fair value of our sales contracts of embedded EPP derivatives valued using historical grid prices and available forecasts of future electricity prices to estimate future electricity prices. Gain (loss) on revaluation of embedded derivatives increased by \$1.5 million for the year ended December 31, 2022 as compared to the prior year period, due to the change in fair value of our embedded EPP derivatives in our sales contracts.

Provision for Income Taxes

	Years Ended December 31,		Change	
	2022	2021	Amount	%
	(dollars in thousands)			
Income tax provision	\$ 1,097	\$ 1,046	\$ 51	4.9 %

Income tax provision consists primarily of income taxes in foreign jurisdictions in which we conduct business. We maintain a full valuation allowance for domestic deferred tax assets, including net operating loss and certain tax credit carryforwards. The income tax provision increased for the year ended December 31, 2022 as compared to the prior year period. The increase was primarily due to fluctuations in the effective tax rates on income earned by international entities.

Net Loss Attributable to Noncontrolling Interests and Redeemable Noncontrolling Interests

	Years Ended December 31,		Change	
	2022	2021	Amount	%
	(dollars in thousands)			
Net loss attributable to noncontrolling interests	\$ (13,378)	\$ (28,896)	\$ 15,518	(53.7)%
Net loss attributable to redeemable noncontrolling interests	(300)	(28)	(272)	971.4 %

Net loss attributable to noncontrolling interests is the result of allocating profits and losses to noncontrolling interests under the hypothetical liquidation at book value ("HLBV") method. HLBV is a balance sheet-oriented approach for applying the equity method of accounting when there is a complex structure, such as the flip structure of the PPA Entities. Net loss attributable to noncontrolling interests improved by \$15.2 million for the year ended December 31, 2022 as compared to the prior year period, due to decreased losses in our PPA Entities, which are allocated to our noncontrolling interests, as well as PPA IV Upgrade.

Critical Accounting Policies and Estimates

The consolidated financial statements have been prepared in accordance with generally accepted accounting principles as applied in the United States ("U.S. GAAP"). The preparation of the consolidated financial statements requires us to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues, costs and expenses and related disclosures. Our discussion and analysis of our financial results under *Results of Operations* above are based on our audited results of operations, which we have prepared in accordance with U.S. GAAP. In preparing these consolidated financial statements, we make assumptions, judgments and estimates that can affect the reported amounts of assets, liabilities, revenues and expenses, and net income. On an ongoing basis, we base our estimates on historical experience, as appropriate, and on various other assumptions that we believe to be reasonable under the circumstances. Changes in the accounting estimates are representative of estimation uncertainty and are reasonably likely to occur from period to period. Accordingly, actual results could differ significantly from the estimates made by our management. We evaluate our estimates and assumptions on an ongoing basis. To the extent that there are material differences between these estimates and actual results, our future financial

statement presentation, financial condition, results of operations and cash flows will be affected. We believe that the following critical accounting policies involve a greater degree of judgment and complexity than our other accounting policies. Accordingly, these are the policies we believe are the most critical to understanding and evaluating the consolidated financial condition and results of operations.

The accounting policies that most frequently require us to make assumptions, judgments and estimates, and therefore are critical to understanding our results of operations, include:

Revenue Recognition

We apply Accounting Standards Codification (“ASC”) Topic 606, *Revenue from Contracts with Customers*. We identify our contracts with customers, determine our performance obligations and the transaction price, and after allocating the transaction price to the performance obligations, we recognize revenue as we satisfy our performance obligations and transfer control of our products and services to our customers. Most of our contracts with customers contain performance obligations with a combination of our Energy Server product, installation and maintenance services. For these performance obligations, we allocate the total transaction price to each performance obligation based on the relative standalone selling price using a cost-plus margin approach.

We generally recognize product revenue from contracts with customers at the point that control is transferred to the customers. This occurs when we achieve customer acceptance and typically occurs upon transfer of control to our customers, which depending on the contract terms is when the system is shipped and delivered to our customers, when the system is shipped and delivered and is physically ready for startup and commissioning, or when the system is shipped and delivered and is turned on and producing power.

For certain installations, control of installations transfers to the customer over time, and the related revenue is recognized over time as the performance obligation is satisfied using the cost-to-total cost (percentage-of-completion) method. We use an input measure of progress to determine the amount of revenue to recognize during each reporting period when such revenue is recognized over time, based on the costs incurred to satisfy the performance obligation.

Service revenue is recognized ratably over the term of the first or renewed one-year service period. Given our customers’ renewal history, we anticipate that most of them will continue to renew their maintenance services agreements each year for the period of their expected use of the Energy Server. The contractual renewal price may be less than the standalone selling price of the maintenance services and consequently the contract renewal option may provide the customer with a material right. We estimate the standalone selling price for customer renewal options that give rise to material rights using the practical alternative by reference to optional maintenance services renewal periods expected to be provided and the corresponding expected consideration for these services. This reflects the fact that our additional performance obligations in any contractual renewal period are consistent with the services provided under the standard first-year warranty. Where we have determined that a customer has a material right as a result of their contract renewal option, we recognize that portion of the transaction price allocated to the material right over the period in which such rights are exercised.

Given that we typically sell an Energy Server with a maintenance service agreement and have not provided maintenance services to a customer who does not have use of an Energy Server, standalone selling prices are estimated using a cost-plus approach. Costs relating to Energy Servers include all direct and indirect manufacturing costs, applicable overhead costs and costs for normal production inefficiencies (i.e., variances). We then apply a margin to the Energy Servers which may vary with the size of the customer, geographic region and the scale of the Energy Server deployment. Costs relating to installation include all direct and indirect installation costs. The margin we apply reflects our profit objectives relating to installation. Costs for maintenance service arrangements are estimated over the life of the maintenance contracts and include estimated future service costs and future material costs. Material costs over the period of the service arrangement are impacted significantly by the longevity of the fuel cells themselves. After considering the total service costs, we apply a lower margin to our service costs than to our Energy Servers as it best reflects our long-term service margin expectations and comparable historical industry service margins. As a result, our estimate of our selling price is driven primarily by our expected margin on both the Energy Server and the maintenance service agreements based on their respective costs or, in the case of maintenance service agreements, the estimated costs to be incurred.

The total transaction price is determined based on the total consideration specified in the contract, including variable consideration in the form of a performance guaranty payment that represents potential amounts payable to customers. The expected value method is generally used when estimating variable consideration, which typically reduces the total transaction price due to the nature of the performance obligations to which the variable consideration relates. These estimates reflect our historical experience and current contractual requirements which cap the maximum amount that may be paid. The expected

value method requires judgment and considers multiple factors that may vary over time depending upon the unique facts and circumstances related to each performance obligation. Depending on the facts and circumstances, a change in variable consideration estimate will either be accounted for at the contract level or using the portfolio method.

For successful sales-leaseback arrangements, we recognize product and installation revenue upon meeting criteria demonstrating we have transferred control to the customer (the Buyer-Lessor). When control of the Energy Server is transferred to the financier, and we determine the leaseback qualifies as an operating lease in accordance with ASC 842, *Leases* (“ASC 842”), we record a ROU asset and a lease liability, and recognize revenue based on the fair value of the Energy Servers with an allocation to product revenue and installations revenue based on the relative standalone selling prices. We recognize as financing obligations any proceeds received to finance our ongoing costs to operate the Energy Servers.

Valuation of Assets and Liabilities of the SK ecoplant Strategic Investment

In October 2021, we entered into an agreement with SK ecoplant that provides the opportunity, but does not require, an additional investment from SK ecoplant in our Class A common stock, subject to a cap on the total potential share purchase, and as a component of transaction, includes a purchase commitment by the investor for future product purchases. On August 10, 2022, we obtained notice from SK ecoplant of its desire to exercise its option to purchase additional Class A common stock (the “Second Tranche Shares”), which led to a final mark-to-market valuation of respective liability with subsequent reclassification of this previously liability-classified financial instrument to additional paid-in capital as a forward contract.

On December 6, 2022, we and SK ecoplant mutually agreed to delay the date of the payment for the Second Tranche Shares from December 6, 2022 to March 31, 2023, which resulted in the modification of the forward contract and triggered the fair value remeasurement of the freestanding equity-classified instrument that continued to qualify for equity classification under the guidance of ASC 815 *Derivatives and Hedging*. Since the change in fair value calculated as the difference between the fair value of the instrument immediately before the modification and the fair value of the instrument immediately after the modification was favorable to us, we did not recognize this change in fair value of the forward contract on the modification date or as of December 31, 2022.

Until our receipt of the notice from SK ecoplant of its intent to exercise its option to purchase additional Class A common stock, we were required to determine the fair value of the assets or liabilities for financial reporting purposes under ASC 820, and as applicable, under the guidance of ASC 815 and ASC Topic 480 *Distinguishing Liabilities from Equity*. We used third party valuation experts that were recognized as financial instrument accounting specialists to provide us with the initial Level 3 fair value measurement that estimated the fair value of the subject assets or liabilities using inputs of the number of shares, underlying prices of Bloom Energy stock, rights and obligations of the counterparties, valuation assumptions related to options, and the assessed value of our product revenue streams and the timing of expected revenue recognition. We determined our final estimate of fair value based on internal reviews and in consideration of the estimates received. The objective of the fair value measurement of our estimate was to represent the price 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. We determined the reasonableness of our valuation methodology, assumptions on the timing and probability of a redemption event, and the expected number of shares to be exercised with the Option, and review the mathematical accuracy of the calculations before recording in our consolidated statement of operations and consolidated balance sheets. See Note 17 - *SK ecoplant Strategic Investment*.

Incremental Borrowing Rate (“IBR”) by Lease Class

We adopted ASC 842, *Leases* on January 1, 2020 on a modified retrospective basis. This guidance requires that, for all our leases, we recognize ROU assets representing our right to use the underlying asset for the lease term, and lease liabilities related to the rights and obligations created by those leases, on the balance sheet regardless of whether they are classified as financing or operating leases, with classification affecting the pattern and presentation of expenses and cash flows on the consolidated financial statements. Lease liabilities are measured at the lease commencement date as the present value of future minimum lease payments over the reasonably certain lease term. Lease ROU assets are measured as the lease liability plus unamortized initial direct costs and prepaid (accrued) lease payments less unamortized balance of lease incentives received. In measuring the present value of the future minimum lease payments, we used our collateralized incremental borrowing rate as our leases do not generally provide an implicit rate. The determination of the incremental borrowing rate considers qualitative and quantitative factors as well as the estimated impact that the collateral has on the rate. We determine our incremental borrowing rate based on the lease class of assets which relates to those supporting of manufacturing and general operations, and those supporting electricity revenue transactions.

For successful sale-leasebacks, as Seller-Lessee, we determine the collateralized IBR on our leased equipment based on a fair value assessment provided by third-party valuation experts.

Stock-Based Compensation

We account for stock options and other equity awards, such as restricted stock units and performance-based stock units, to employees and non-employee directors under the provisions of ASC 718, *Compensation-Stock Compensation*. Accordingly, the stock-based compensation expense for these awards is measured based on the fair value on the date of grant. For stock options, we recognize the expense, net of estimated forfeitures, under the straight-line attribution over the requisite service period which is generally the vesting term. The fair value of the stock options is estimated using the Black-Scholes valuation model. For options with a vesting condition tied to the attainment of service and market conditions, stock-based compensation costs are recognized using Monte Carlo simulations. In addition, we use the Black-Scholes valuation model to estimate the fair value of stock purchase rights under the Bloom Energy Corporation 2018 Employee Stock Purchase Plan (the “2018 ESPP”). The fair value of the 2018 ESPP purchase rights is recognized as expense under the multiple options approach.

The Black-Scholes valuation model uses as inputs the fair value of our common stock and assumptions we make for the volatility of our common stock, the expected term of the award, the risk-free interest rate for a period that approximates the expected term of the stock options and the expected dividend yield. In developing estimates used to calculate assumptions, we established the expected term for employee options as well as expected forfeiture rates based on the historical settlement experience and after giving consideration to vesting schedules.

Income Taxes

We account for income taxes using the liability method under ASC 740, *Income Taxes*. Under this method, deferred tax assets and liabilities are determined based on net operating loss carryforwards, research and development credit carryforwards and temporary differences resulting from the different treatment of items for tax and financial reporting purposes. Deferred items are measured using the enacted tax rates and laws that are expected to be in effect when the differences reverse. We must assess the likelihood that deferred tax assets will be recovered as deductions from future taxable income. This determination is based on expected future results and the future reversals of existing taxable temporary differences. Furthermore, uncertain tax positions are evaluated by management and amounts are recorded when it is more likely than not that the position will be sustained upon examination, including resolution of any related appeals or litigation processes, based on the technical merits. Significant judgement is required throughout management’s process in evaluating each uncertain tax position including future taxable income expectations and tax-planning strategies to determine whether the more likely than not recognition threshold has been met. We have provided a full valuation allowance on our domestic deferred tax assets because we believe it is more likely than not that our deferred tax assets will not be realized.

Principles of Consolidation

Our consolidated financial statements include the operations of our subsidiaries in which we have a controlling financial interest. We use a qualitative approach in assessing the consolidation requirements for our PPA Entity that is a variable interest entity (“VIE”). This approach focuses on determining whether we have the power to direct those activities that significantly affect its economic performance and whether we have the obligation to absorb losses, or the right to receive benefits that could potentially be significant to the PPA Entity. The considerations for VIE consolidation is a complex analysis that requires us to determine whether we are the primary beneficiary and therefore have the power to direct activities which are most significant to the PPA Entity.

Allocation of Profits and Losses of Consolidated Entities to Noncontrolling Interests and Redeemable Noncontrolling Interests

We generally allocate profits and losses to noncontrolling interests under the HLBV method. The HLBV method is a balance sheet-oriented approach for applying the equity method of accounting when there is a complex structure, such as the flip structure of the PPA Entity.

The determination of equity in earnings under the HLBV method requires management to determine how proceeds, upon a hypothetical liquidation of the entity at book value, would be allocated between our investors. The noncontrolling interest balance is presented as a component of permanent equity in the consolidated balance sheets.

Noncontrolling interests with redemption features, such as put options, that are not solely within our control are considered redeemable noncontrolling interests. Exercisability of put options are solely dependent upon the passage of time,

and hence, such put options are considered to be probable of becoming exercisable. We elected to accrete changes in the redemption value over the period from the date it becomes probable that the instrument will become redeemable to the earliest redemption date of the instrument by using an interest method. The balance of redeemable noncontrolling interests on the balance sheets is reported at the greater of its carrying value or its maximum redemption value at each reporting date. The redeemable noncontrolling interests are classified as temporary equity and therefore are reported in the mezzanine section of the consolidated balance sheets as redeemable noncontrolling interests.

ITEM 7A - QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We are exposed to market risks as part of our ongoing business operations, primarily by exposure to changes in interest rates, in commodity fuel prices and in foreign currency.

Interest Rate Risk

Our cash is maintained in interest-bearing accounts and our cash equivalents are invested in money market funds. Lower interest rates could have an adverse impact on our interest income or we could potentially incur other expenses if a negative interest rate environment were to exist. Due to the short-term investment nature of our cash and cash equivalents, we believe that we do not have material financial statement exposure to changes in fair value as a result of changes in interest rates. Since we believe we have the ability to liquidate substantially all of our short-term investment portfolio, we do not expect our operating results or cash flows to be materially affected to any significant degree by a sudden change in market interest rates on our investment portfolio.

To provide a meaningful assessment of the interest rate risk associated with our cash and cash equivalents, we performed a sensitivity analysis to determine the impact a change in interest rates would have on our income statement and in investment fair values, assuming a 1% decline in yield. Based on our investment positions on both December 31, 2022 and 2021, a hypothetical 1% decrease in interest rates across all maturities would result in \$4.4 million and \$5.8 million declines in interest income and/or increase in other expenses on an annualized basis, respectively. As these investments have maturities of less than twelve months, changes with respect to the portfolio fair value would be limited to these amounts and only be realized if we were to terminate the investments prior to maturity.

We refinanced our only LIBOR-based floating-rate loan with a fixed-rate loan in 2021. As our debt is fixed-rate debt, interest rate changes do not affect our earnings or cash flows. In case we end up issuing new debt or refinancing our current debt, the overall interest expense can materially increase.

Commodity Price Risk

We are subject to commodity price risk arising from price movements for natural gas that we supply to our customers to operate our Energy Servers under certain power purchase agreements. While we entered into a natural gas fixed price forward contract with our gas supplier in 2011, the fuel forward contract meets the definition of a derivative under U.S. GAAP and accordingly, any changes in its fair value are recorded within cost of revenue in our consolidated statements of operations. The fair value of the contract is determined using a combination of factors including our credit rating and future natural gas prices. As of December 31, 2021, our remaining natural gas fixed price forward contracts had no fair value. There were no natural gas fixed price forward contracts as of December 31, 2022.

Foreign Currency Risk

Our sales contracts are primarily denominated in U.S. dollars and, therefore, substantially all of our revenue is not subject to foreign currency market risk. Our supply contracts are primarily denominated in U.S. dollars and our corporate operations are domiciled in the United States. However, we conduct some international field operations and therefore, find it necessary to transact in foreign currencies for limited operational purposes, necessitating that we hold foreign currency bank accounts.

To provide a meaningful assessment of the risk associated with our foreign currency holdings, we performed a sensitivity analysis to determine the impact a currency devaluation would have on our balance sheet, assuming a 20% decline in the value of the U.S. dollar. Based on our foreign currency holdings as of December 31, 2022 and 2021, a hypothetical 20% devaluation of the U.S. dollar against foreign currencies would not be material to our reported cash position.

However, an increasing portion of our operating expenses are incurred outside the United States, are denominated in foreign currencies and are subject to such risk. Although not yet material, if we are not able to successfully hedge against the risks associated with currency fluctuations in our future activities, our financial condition and operating results could be adversely affected.

Actual future gains and losses associated with our investment portfolio, debt and derivative positions and foreign currency may differ materially from the sensitivity analyses performed as of December 31, 2022 and 2021 due to the inherent limitations associated with predicting the timing and amount of changes in interest rates, foreign currency exchange rates and our actual commodity derivative exposures and positions.

ITEM 8 - FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

Index to Consolidated 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 Bloom Energy Corporation

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Bloom Energy Corporation and subsidiaries (the “Company”) as of December 31, 2022 and 2021, the related consolidated statements of operations, comprehensive loss, stockholders’ equity (deficit) 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 “financial statements”). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of 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 accounting principles generally accepted in the United States of America.

We have also 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 (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission and our report dated February 21, 2023, expressed an unqualified opinion on the Company’s internal control over financial reporting.

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) relate to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Product Revenue Recognition – Refer to Notes 2 and 3 to the financial statements

Critical Audit Matter Description

Product revenue for the sale of energy servers is recognized upon transfer of control to customers which typically occurs at customer acceptance, which, depending on the contract terms, is when the product is shipped and delivered to a customer, is physically ready for startup and commissioning, or when the product is shipped, delivered, turned on, and producing power. For the year ended December 31, 2022, the Company recorded \$880.7 million in product revenue.

We identified the timing of product revenue recognition (i.e., customer acceptance), as a critical audit matter because of the degree of auditor judgment and increased extent of effort when performing audit procedures to evaluate the appropriateness of the timing of product revenue recognized during the year.

How the Critical Audit Matter Was Addressed in the Audit

Our audit procedures related to the timing of product revenue recognition included the following, among others:

- We obtained an understanding of the nature of the revenue recognition process through inquiry with the Company personnel and inspection of executed contracts with customers
- We tested the design and operating effectiveness of internal controls over the Company's timing of product revenue recognition
- For a sample of product revenue acceptances during the year ended December 31, 2022, we performed the following:
 - a. We inspected the executed contracts to identify the relevant terms and conditions which would impact the Company's accounting conclusions, including the timing of the transfer of control of products to customers
 - b. We inspected source documents to test the timing of revenue recognition, or customer acceptance, such as agreed-upon sales orders, shipping records, mechanical completion certifications, commencement of operation certifications, as well as the related invoices generated and evaluated any differences. We corroborated our inspection of source documents by sending written confirmations to customers confirming the period of customer acceptance.

/s/ Deloitte & Touche LLP

San Jose, California

February 21, 2023

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

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the stockholders and the Board of Directors of Bloom Energy Corporation

Opinion on Internal Control over Financial Reporting

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

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated financial statements as of and for the year ended December 31, 2022, of the Company and our report dated February 21, 2023, expressed an unqualified opinion on those financial statements.

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/ Deloitte & Touche LLP

San Jose, California

February 21, 2023

Bloom Energy Corporation
Consolidated Balance Sheets
(in thousands, except share data and par values)

	December 31,	
	2022	2021
Assets		
Current assets:		
Cash and cash equivalents ¹	\$ 348,498	\$ 396,035
Restricted cash ¹	51,515	92,540
Accounts receivable less allowance for doubtful accounts of \$119 as of December 31, 2022 and 2021 ¹	250,995	87,789
Contract assets	46,727	25,201
Inventories ¹	268,394	143,370
Deferred cost of revenue	46,191	25,040
Customer financing receivable ¹	—	5,784
Prepaid expenses and other current assets ¹	43,643	30,661
Total current assets	1,055,963	806,420
Property, plant and equipment, net ¹	600,414	604,106
Operating lease right-of-use assets ¹	126,955	106,660
Customer financing receivable ¹	—	39,484
Restricted cash ¹	118,353	126,539
Deferred cost of revenue	4,737	1,289
Other long-term assets ¹	40,205	41,073
Total assets	\$ 1,946,627	\$ 1,725,571
Liabilities, redeemable convertible preferred stock, redeemable noncontrolling interest and stockholders' equity (deficit)		
Current liabilities:		
Accounts payable ¹	\$ 161,770	\$ 72,967
Accrued warranty	17,332	11,746
Accrued expenses and other current liabilities ¹	144,183	114,138
Deferred revenue and customer deposits ¹	159,048	89,975
Operating lease liabilities ¹	16,227	13,101
Financing obligations	17,363	14,721
Recourse debt	12,716	8,348
Non-recourse debt ¹	13,307	17,483
Total current liabilities	541,946	342,479
Deferred revenue and customer deposits ¹	56,392	90,310
Operating lease liabilities ¹	132,363	106,187
Financing obligations	442,063	461,900
Recourse debt	273,076	283,483
Non-recourse debt ¹	112,480	217,416
Other long-term liabilities	9,491	16,772
Total liabilities	1,567,811	1,518,547
Commitments and contingencies (Note 13)		
Redeemable convertible preferred stock, Series A: 10,000,000 shares authorized; no shares and 10,000,000 shares issued and outstanding at December 31, 2022 and December 31, 2021, respectively.	—	208,551
Redeemable noncontrolling interest	—	300
Stockholders' equity (deficit) :		
Common stock: \$0.0001 par value; Class A shares - 600,000,000 shares authorized, and 189,864,722 shares and 160,627,544 shares issued and outstanding and Class B shares - 600,000,000 shares authorized and 15,799,968 shares and 15,832,863 shares issued and outstanding at December 31, 2022 and December 31, 2021, respectively.	20	18
Additional paid-in capital	3,906,491	3,219,081
Accumulated other comprehensive loss	(1,251)	(350)
Accumulated deficit	(3,564,483)	(3,263,075)
Total stockholders' equity (deficit) attributable to Class A and Class B common stockholders	340,777	(44,326)
Noncontrolling interest	38,039	42,499
Total stockholders' equity (deficit)	\$ 378,816	\$ (1,827)
Total liabilities, redeemable convertible preferred stock, redeemable noncontrolling interest and stockholders' equity (deficit)	\$ 1,946,627	\$ 1,725,571

¹We have variable interest entities related to PPAs (see Note 11 - *Portfolio Financings*) and joint venture in the Republic of Korea (see Note 17 - *SK ecoplant Strategic Investment*), which represent a portion of the consolidated balances recorded within these financial statement line items in the consolidated balance sheets.

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

Bloom Energy Corporation
Consolidated Statements of Operations
(in thousands, except per share data)

	Years Ended December 31,		
	2022	2021	2020
Revenue:			
Product	\$ 880,664	\$ 663,512	\$ 518,633
Installation	92,120	96,059	101,887
Service	150,954	144,184	109,633
Electricity	75,387	68,421	64,094
Total revenue	1,199,125	972,176	794,247
Cost of revenue:			
Product	616,178	471,654	332,724
Installation	104,111	110,214	116,542
Service	168,491	148,286	132,329
Electricity	162,057	44,441	46,859
Total cost of revenue	1,050,837	774,595	628,454
Gross profit	148,288	197,581	165,793
Operating expenses:			
Research and development	150,606	103,396	83,577
Sales and marketing	90,934	86,499	55,916
General and administrative	167,740	122,188	107,085
Total operating expenses	409,280	312,083	246,578
Loss from operations	(260,992)	(114,502)	(80,785)
Interest income	3,887	262	1,475
Interest expense	(53,493)	(69,025)	(76,276)
Interest expense - related parties	—	—	(2,513)
Loss on extinguishment of debt	(8,955)	—	(12,878)
Other income (expense), net	4,998	(8,139)	(8,318)
Gain (loss) on revaluation of embedded derivatives	566	(919)	464
Loss before income taxes	(313,989)	(192,323)	(178,831)
Income tax provision	1,097	1,046	256
Net loss	(315,086)	(193,369)	(179,087)
Less: Net loss attributable to noncontrolling interest	(13,378)	(28,896)	(21,513)
Net loss attributable to Class A and Class B common stockholders	(301,708)	(164,473)	(157,574)
Less: Net loss attributable to redeemable noncontrolling interest	(300)	(28)	(21)
Net loss before portion attributable to redeemable noncontrolling interest and noncontrolling interest	\$ (301,408)	\$ (164,445)	\$ (157,553)
Net loss per share available to Class A and Class B common stockholders, basic and diluted	\$ (1.62)	\$ (0.95)	\$ (1.14)
Weighted average shares used to compute net loss per share available to Class A and Class B common stockholders, basic and diluted	185,907	173,438	138,722

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

Bloom Energy Corporation
Consolidated Statements of Comprehensive Loss
(in thousands)

	Years Ended December 31,		
	2022	2021	2020
Net loss	\$ (315,086)	\$ (193,369)	\$ (179,087)
Other comprehensive loss, net of taxes:			
Unrealized loss on available-for-sale securities	—	—	(23)
Change in derivative instruments designated and qualifying as cash flow hedges	—	15,243	(6,896)
Foreign currency translation adjustment	(794)	(595)	—
Other comprehensive (loss) income, net of taxes	(794)	14,648	(6,919)
Comprehensive loss	(315,880)	(178,721)	(186,006)
Less: Comprehensive loss attributable to noncontrolling interest	(13,271)	(13,907)	(28,404)
Comprehensive loss attributable to Class A and Class B common stockholders	\$ (302,609)	\$ (164,814)	\$ (157,602)
Less: Comprehensive loss attributable to redeemable noncontrolling interest	\$ (300)	\$ (28)	\$ (21)
Comprehensive loss before portion attributable to redeemable noncontrolling interest and noncontrolling interest	\$ (302,309)	\$ (164,786)	\$ (157,581)

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

Bloom Energy Corporation
Consolidated Statements of Stockholders' Equity (Deficit)
(in thousands, except share data)

	Class A and Class B Common Stock		Additional Paid-In Capital	Accumulated Other Comprehensive Loss	Accumulated Deficit	Total equity (deficit) attributable to Class A and Class B common stockholders	Noncontrolling Interest	Total Stockholders' Equity (Deficit)
	Shares	Amount						
Balances at December 31, 2021	176,460,407	\$ 18	\$ 3,219,081	\$ (350)	\$ (3,263,075)	\$ (44,326)	\$ 42,499	\$ (1,827)
Conversion of redeemable convertible preferred stock to Class A Common Stock	10,000,000	1	208,550	—	—	208,551	—	208,551
Issuance of restricted stock awards	2,957,215	—	—	—	—	—	—	—
ESPP purchase	759,744	—	11,600	—	—	11,600	—	11,600
Exercise of stock options	537,324	—	3,679	—	—	3,679	—	3,679
Stock-based compensation	—	—	112,722	—	—	112,722	—	112,722
Distributions and payments to noncontrolling interests	—	—	(500)	—	—	(500)	(6,354)	(6,854)
Contributions from noncontrolling interest	—	—	—	—	—	—	2,815	2,815
Public share offering (Note 1)	14,950,000	1	371,526	—	—	371,527	—	371,527
Forward contract to purchase Class A Common Stock (Note 5)	—	—	4,183	—	—	4,183	—	4,183
Buyout of noncontrolling interest (Note 11)	—	—	(24,350)	—	—	(24,350)	12,350	(12,000)
Foreign currency translation adjustment	—	—	—	(901)	—	(901)	107	(794)
Net loss ¹	—	—	—	—	(301,408)	(301,408)	(13,378)	(314,786)
Balances at December 31, 2022	205,664,690	\$ 20	\$ 3,906,491	\$ (1,251)	\$ (3,564,483)	\$ 340,777	\$ 38,039	\$ 378,816

¹ Excludes \$300 attributable to redeemable noncontrolling interest.

Note: Beginning redeemable NCI of \$300 - Net loss attributable to redeemable NCI of \$300 = Ending redeemable NCI of Nil.

	Class A and Class B Common Stock		Additional Paid-In Capital	Accumulated Other Comprehensive Loss	Accumulated Deficit	Total (deficit) equity attributable to Class A and Class B common stockholders	Noncontrolling Interest	Total Stockholders' (Deficit) Equity
	Shares	Amount						
Balances at December 31, 2020	168,002,726	\$ 17	\$ 3,182,753	\$ (9)	\$ (3,103,937)	\$ 78,824	\$ 62,195	\$ 141,019
Cumulative effect upon adoption of new accounting standard	—	—	(126,799)	—	5,308	(121,491)	—	(121,491)
Issuance of restricted stock awards	3,052,012	—	—	—	—	—	—	—
ESPP purchase	1,945,305	—	10,045	—	—	10,045	—	10,045
Exercise of stock options	3,460,364	1	79,744	—	—	79,745	—	79,745
Stock-based compensation	—	—	73,338	—	—	73,338	—	73,338
Change in effective portion of interest rate swap agreement	—	—	—	—	—	—	15,243	15,243
Distributions and payments to noncontrolling interests	—	—	—	—	—	—	(5,789)	(5,789)
Foreign currency translation adjustment	—	—	—	(341)	(1)	(342)	(254)	(596)
Net loss ²	—	—	—	—	(164,445)	(164,445)	(28,896)	(193,341)
Balances at December 31, 2021	176,460,407	\$ 18	\$ 3,219,081	\$ (350)	\$ (3,263,075)	\$ (44,326)	\$ 42,499	\$ (1,827)

² Excludes \$28 attributable to redeemable noncontrolling interest.

Note: Beginning redeemable NCI of \$377 - distributions to redeemable noncontrolling interests of \$49 - Net loss attributable to redeemable NCI of \$28 = Ending redeemable NCI of \$300.

	Class A and Class B Common Stock		Additional Paid-In Capital	Accumulated Other Comprehensive (Loss) Gain	Accumulated Deficit	Total equity (deficit) attributable to Class A and Class B common stockholders	Noncontrolling Interest	Total Stockholders' Equity (Deficit)
	Shares	Amount						
Balances at December 31, 2019	121,036,289	\$ 12	\$ 2,686,759	\$ 19	\$ (2,946,384)	\$ (259,594)	\$ 91,291	\$ (168,303)
Conversion of Notes	35,881,250	4	300,848	—	—	300,852	—	300,852
Issuance of convertible notes	—	—	126,799	—	—	126,799	—	126,799
Adjustment of embedded derivative for debt modification	—	—	(24,071)	—	—	(24,071)	—	(24,071)
Issuance of restricted stock awards	7,806,038	1	—	—	—	1	—	1
ESPP purchase	1,937,825	—	8,499	—	—	8,499	—	8,499
Exercise of stock options	1,341,324	—	14,988	—	—	14,988	—	14,988
Stock-based compensation	—	—	68,931	—	—	68,931	—	68,931
Unrealized loss on available-for-sale securities	—	—	—	(23)	—	(23)	—	(23)
Change in effective portion of interest rate swap agreement	—	—	—	(5)	—	(5)	(6,891)	(6,896)
Distributions and payments to noncontrolling interests	—	—	—	—	—	—	(7,205)	(7,205)
Contributions from noncontrolling interest	—	—	—	—	—	—	6,513	6,513
Net loss ³	—	—	—	—	(157,553)	(157,553)	(21,513)	(179,066)
Balances at December 31, 2020	168,002,726	\$ 17	\$ 3,182,753	\$ (9)	\$ (3,103,937)	\$ 78,824	\$ 62,195	\$ 141,019

³ Excludes \$21 attributable to redeemable noncontrolling interest.

Note: Beginning redeemable NCI of \$443 - distributions to redeemable noncontrolling interests of \$45 - Net loss attributable to redeemable NCI of \$21 = Ending redeemable NCI of \$377.

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

Bloom Energy Corporation
Consolidated Statements of Cash Flows
(in thousands)

	Years Ended December 31,		
	2022	2021	2020
Cash flows from operating activities:			
Net loss	\$ (315,086)	\$ (193,369)	\$ (179,087)
Adjustments to reconcile net loss to net cash used in operating activities:			
Depreciation and amortization	61,608	53,454	52,279
Non-cash lease expense	20,155	9,708	5,328
Write-off of assets related to PPA IIIa and PPA IV	113,514	—	—
Revaluation of derivative contracts	(9,583)	17,532	(497)
Stock-based compensation expense	112,259	73,274	73,893
Gain on remeasurement of investment	—	(1,966)	—
Contingent consideration remeasurement	—	(3,623)	—
Interest expense on interest rate swap settlement	—	(641)	—
Loss on extinguishment of debt	8,955	—	11,785
Amortization of warrants and debt issuance costs	3,032	3,797	6,455
Unrealized foreign currency exchange loss (gain)	(3,267)	77	19
Other	3,532	—	4,346
Changes in operating assets and liabilities:			
Accounts receivable	(162,864)	8,608	(61,702)
Contract assets	(21,525)	(21,874)	—
Inventories	(124,878)	(885)	(33,004)
Deferred cost of revenue	(24,282)	17,567	19,910
Customer financing receivable	2,510	5,428	5,159
Prepaid expenses and other current assets	(17,590)	1,520	(3,124)
Other long-term assets	(2,617)	(2,854)	2,904
Operating lease right-of-use assets and operating lease liabilities	3,016	(12,953)	(2,855)
Financing lease liabilities	896	1,142	—
Accounts payable	86,498	13,017	(622)
Accrued warranty	5,586	1,481	(241)
Accrued expenses and other current liabilities	43,243	(2,144)	17,753
Deferred revenue and customer deposits	35,156	(22,677)	(12,972)
Other long-term liabilities	(9,991)	(4,300)	(4,523)
Net cash used in operating activities	(191,723)	(60,681)	(98,796)
Cash flows from investing activities:			
Purchase of property, plant and equipment	(116,823)	(49,810)	(37,913)
Net cash acquired from step acquisition	—	3,114	—
Net cash used in investing activities	(116,823)	(46,696)	(37,913)
Cash flows from financing activities:			
Proceeds from issuance of debt	—	135,989	300,000
Proceeds from issuance of debt to related parties	—	—	30,000
Repayment of debt of PPA IIIa and PPA IV	(100,705)	—	—
Repayment of debt	(19,881)	(123,374)	(176,522)
Repayment of debt - related parties	—	—	(2,105)
Make-whole payment related to PPA IIIa and PPA IV debt	(6,553)	—	—
Debt issuance costs	—	(1,950)	(13,247)
Proceeds from financing obligations	3,261	16,849	26,279
Repayment of financing obligations	(35,543)	(13,642)	(10,756)
Contributions from noncontrolling interest	2,815	—	6,513
Distributions to redeemable noncontrolling interests	—	(49)	(45)
Distributions and payments to noncontrolling interests	(6,854)	(5,789)	(7,577)
Purchase of noncontrolling interest of PPA IV and PPA V	(12,000)	—	—
Proceeds from issuance of common stock	15,279	89,790	23,491
Proceeds from issuance of redeemable convertible preferred stock, net	—	208,551	—
Proceeds from Class A common share offering	385,396	—	—
Public share offering costs	(13,775)	—	—
Other	(76)	—	—
Net cash provided by financing activities	211,364	306,375	176,031
Effect of exchange rate changes on cash, cash equivalent and restricted cash	434	(594)	—
Net (decrease) increase in cash, cash equivalents and restricted cash	(96,748)	198,404	39,322
Cash, cash equivalents, and restricted cash:			
Beginning of period	615,114	416,710	377,388

End of period	\$	518,366	\$	615,114	\$	416,710
Supplemental disclosure of cash flow information:						
Cash paid during the period for interest	\$	48,980	\$	68,739	\$	71,651
Cash paid for amounts included in the measurement of lease liabilities:						
Operating cash flows from operating leases		14,001		17,416		2,855
Operating cash flows from financing leases		1,085		878		61
Cash paid during the period for income taxes		1,439		576		371
Non-cash investing and financing activities:						
Increase in recourse debt, non-current upon adoption of ASU 2020-06, net	\$	—	\$	121,491	\$	—
Liabilities recorded for property, plant and equipment		10,988		6,095		7,175
Operating lease liabilities arising from obtaining right-of-use assets upon adoption of new lease guidance		—		—		39,775
Transfer from customer financing receivable to property, plant and equipment		42,758		—		—
Forward contract to purchase Class A Common Stock (Note 5)		4,183		—		—
Conversion of Series A Redeemable Convertible Preferred Stock to Class A Common Stock		208,551		—		—
Recognition of operating lease right-of-use asset during the year-to-date period		36,402		82,802		12,829
Recognition of financing lease right-of-use asset during the year-to-date period		896		2,210		385
Conversion of 10% convertible promissory notes into Class A common stock		—		—		252,797
Conversion of 10% convertible promissory notes to related party into Class A common stock		—		—		50,800
Accrued interest for notes		—		—		1,298
Adjustment of embedded derivative related to debt extinguishment		—		—		24,071

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

Bloom Energy Corporation
Notes to Consolidated Financial Statements

1. Nature of Business, Liquidity and Basis of Presentation

Nature of Business

We design, manufacture, sell and, in certain cases, install solid-oxide fuel cell systems (“Energy Servers”) for on-site power generation. Our Energy Servers utilize an innovative fuel cell technology and provide efficient energy generation with reduced operating costs and lower greenhouse gas emissions as compared to conventional fossil fuel generation. By generating power where it is consumed, our energy producing systems offer increased electrical reliability and improved energy security, while providing a path to energy independence. The corporate headquarters is located in San Jose, California.

In March 2020 the World Health Organization declared COVID-19 a pandemic. Throughout 2020 and into 2022, many variants of the virus arose. We are still assessing the impact COVID-19 and related variants (together, “COVID-19”) may have on our business, but there can be no assurance that this analysis will enable us to avoid part or all of any impact from the spread of COVID-19 or its consequences. The extent to which the COVID-19 pandemic and global efforts to contain its spread will impact our operations will depend on future developments, which are highly uncertain and cannot be predicted at this time, and include the duration, severity and scope of the pandemic and the actions taken to contain or treat the COVID-19 pandemic.

We continue to monitor and adjust as appropriate our operations in response to the COVID-19 pandemic. There have been a number of supply chain disruptions throughout the global supply chain as countries are in various stages of opening up and demand for certain components increases. Although we were able to find alternatives for many component shortages, we experienced some delays and cost increases with respect to container shortages, ocean shipping and air freight.

As a result of the war in Ukraine after invasion by the Russian Federation on February 24, 2022, various nations, including the United States, have instituted economic sanctions and other responsive measures, which have resulted in an increased level of global economic and political uncertainty and overall geopolitical instability. The impacts of sanctions and other measures being imposed have not had a material impact to the consolidated results of operations. However, a significant escalation or expansion of the Ukraine war’s current scope and associated global economic disruption could have a negative effect on our business.

Additionally, supply chain disruptions and logistical challenges due to the war in Ukraine and any indirect effects thereof are expected to further complicate existing supply chain constraints, which could adversely affect profitability. To date, we have not experienced any supply chain disruptions as a result of the war in Ukraine.

Given the evolving nature of the war in Ukraine, and the related sanctions, potential governmental actions, and economic impact, the scope and magnitude of any such potential effects remain uncertain. While we may experience negative impacts on our business, financial condition, and consolidated results of operations, we are unable to estimate the ultimate extent or nature of these impacts at this time.

Seasonal Trends and Economic Incentives

Our business and results of financial operations are not subject to industry-specific seasonal fluctuations. The desirability of our solution can be impacted by the availability and value of various governmental, regulatory and tax-based incentives which may change over time.

Liquidity

We have generally incurred operating losses and negative cash flows from operations since our inception. With the series of new debt offerings, debt extensions and conversions to equity that we completed during 2020 and 2021, we had \$285.8 million of total outstanding recourse debt as of December 31, 2022, \$273.1 million of which is classified as long-term debt. Our recourse debt scheduled repayments commenced in June 2022.

On October 23, 2021, we entered into a Securities Purchase Agreement (the “SPA”) with SK ecoplant Co., Ltd. (formerly known as SK Engineering and Construction Co., Ltd.) (“SK ecoplant”) in connection with a strategic partnership. Pursuant to the SPA, on December 29, 2021, SK ecoplant purchased 10,000,000 shares of Bloom Energy zero coupon, non-

voting Series A redeemable convertible preferred stock (“RCPS”), par value \$0.0001 per share, at a purchase price of \$25.50 per share, for an aggregate purchase price of \$255.0 million, including an option to purchase additional Class A common stock.

On August 10, 2022, pursuant to the SPA, SK ecoplant notified us of its intent to exercise its option to purchase additional shares of our Class A common stock, pursuant to a Second Tranche Exercise Notice (as defined in the SPA). It elected to purchase 13,491,701 shares (the “Second Tranche Shares”) at a purchase price of \$23.05 per share, calculated as a 15% premium to the volume-weighted average closing price of the 20 consecutive trading day period immediately preceding the exercise of the option (see Note 5 - *Fair Value*). The aggregate purchase price approximates cash proceeds to be received by us of \$311.0 million, net of related incremental direct costs of \$0.1 million. The closing of this purchase (the “Second Closing Date”) was expected to be the latter of the parties receiving clearance from the U.S. Department of Justice and the Federal Trade Commission of the purchase under the Hart-Scott-Rodino Antitrust Improvements Act of 1974 (the “HSR”), as amended (which was October 7, 2022), and December 6, 2022.

On December 6, 2022, SK ecoplant and Bloom mutually agreed to delay the Second Closing Date until March 31, 2023, unless an earlier date is mutually agreed upon, and subject to and assuming the satisfaction of applicable regulatory clearance. We stipulated that if filing for HSR approval is required, in no event it can be filed later than March 31, 2023.

For more information about the SPA, please see Note 17 - *SK ecoplant Strategic Investment*, and for more information about our joint venture with SK ecoplant, please see Note 12 - *Related Party Transactions*.

In November 2021, PPA V, our remaining Power Purchase Agreement (“PPA”) entity, entered into \$136.0 million, 3.04% Senior Secured Notes due June 30, 2031, which replaced the LIBOR + 2.5% Term Loan due December 2021.

On August 19, 2022, we completed an underwritten public offering (the “Offering”), pursuant to which we issued and sold 13,000,000 shares of Class A common stock at price of \$26.00 per share. As a part of the Offering, the underwriters were provided a 30-day option to purchase an additional 1,950,000 shares of our Class A common stock at the same price, less underwriting discounts and commissions, which was exercised contemporaneously with the Offering. The aggregate net proceeds received by us from the Offering were \$371.5 million after deducting underwriting discounts and commissions of \$16.5 million and incremental costs directly attributable to the Offering of \$0.7 million.

Our future capital requirements will depend on many factors, including our rate of revenue growth, the timing and extent of spending on research and development efforts and other business initiatives, the rate of growth in the volume of system builds and the need for additional manufacturing space, the expansion of sales and marketing activities both in domestic and international markets, market acceptance of our product, our ability to secure financing for customer use of our Energy Servers, the timing of installations, and overall economic conditions including the impact of COVID-19 and inflationary pressure in the US on our ongoing and future operations. The rising interest rate environment in the US has and will continue to adversely impact the cost of new capital deployment.

In the opinion of management, the combination of our existing cash and cash equivalents and operating cash flows is expected to be sufficient to meet our operational and capital cash flow requirements and other cash flow needs for the next 12 months from the date of issuance of this Annual Report on Form 10-K.

Inflation Reduction Act of 2022 – New and Expanded Production and Tax Credits for Manufacturers and Projects to Support Clean Energy

On August 16, 2022, President Biden signed into law the Inflation Reduction Act of 2022 (the “IRA”). The IRA contains provisions which we expect will have a significant impact on the development and financing of clean energy projects in the United States. The IRA includes the extension and expansion of the Investment Tax Credit (“ITC”) and Production Tax Credit (“PTC”) and the addition of expanded tax credits for other technologies and for manufacturing of clean energy equipment as well as terms allowing parties to more easily monetize the tax credits. The IRA also includes some targeted bonus credit incentives intended to encourage development in low-income communities, the use of domestically produced materials, and compliance with certain labor-related requirements.

The IRA contains several credits and incentive provisions that may be relevant to us, which we have summarized below:

- Section 48 – ITC, which provides a tax credit based on capital investment in a variety of renewable and conventional energy technologies to incentivize investment in new energy resources and more efficient use of fuel, including fuel cell technology;

- Section 48C – Qualified Advanced Energy Project (reenacted), which provides an ITC through a competitive application process administered through the Department of Energy equal to 6% or 30% of the investment with respect to advanced energy projects;
- Section 45V – Clean Hydrogen, which provides a PTC of up to \$3 per kg of qualified clean hydrogen over a 10-year credit period for the production of qualified clean hydrogen at a qualified facility in the US; and
- Section 45Q – Carbon Capture Sequestration, which provides a credit ranging from \$12-\$17 or \$60-\$85 per metric ton based on the amount of carbon oxides captured from a qualified facility over a 12-year period

We believe that the programs and credits included in the IRA align well with our business model and could provide significant benefits with respect to incentivizing the purchase of our current product offerings and technologies. In particular, the new PTC for qualified clean hydrogen and credit for carbon capture could result in increased demand for commercial solutions to hydrogen production technology and carbon capture, including our solid oxide fuel-cell based electrolyzer and energy server. As Treasury has not yet issued guidance on several of the provisions that applicable to our business, we continue to assess the impact.

At the time of IRA implementation in August 2022, some of our existing contracts contemplated price adjustments due to changes to ITC rate at the inception of the contracts. As a result, we recognized \$8.7 million in product revenue and \$1.3 million in installation revenue for the year ended December 31, 2022, due to a change in variable considerations for energy servers placed in service during the eligible periods from such existing contracts.

Basis of Presentation

We have prepared the consolidated financial statements included herein pursuant to the rules and regulations of the U.S. Securities and Exchange Commission (“SEC”), and as permitted by those rules, including all disclosures required by generally accepted accounting principles as applied in the United States (“U.S. GAAP”). Certain prior period amounts have been reclassified to conform to the current period presentation.

Principles of Consolidation

These consolidated financial statements reflect our accounts and operations and those of our subsidiaries in which we have a controlling financial interest. We use a qualitative approach in assessing the consolidation requirement for our variable interest entity (“VIEs”), which we refer to as a tax equity partnership (each such VIE, also referred to as our power purchase agreement PPA Entity) and a joint venture in the Republic of Korea (“Korea JV”). This approach focuses on determining whether we have the power to direct those activities of the PPA Entity and the Korea JV that most significantly affect their economic performance and whether we have the obligation to absorb losses, or the right to receive benefits, that could potentially be significant to the PPA Entity and the Korea JV. For all periods presented, we have determined that we are the primary beneficiary in all of our operational PPA Entity and the Korea JV, as discussed in Note 11 - *Portfolio Financings* and Note 17 - *SK ecoplant Strategic Investment*, respectively. We evaluate our relationships with the PPA Entity and the Korea JV on an ongoing basis to ensure that we continue to be the primary beneficiary. All intercompany transactions and balances have been eliminated upon consolidation.

The sale of an operating company with a portfolio of PPAs in which we do not have an equity interest is called a “Third-Party PPA.” We have determined that, although these entities are VIEs, we do not have the power to direct those activities of the Third-Party PPAs that most significantly affect their economic performance. We also do not have the obligation to absorb losses, or the right to receive benefits, that could potentially be significant to the Third-Party PPAs. Because we are not the primary beneficiary of these activities, we do not consolidate Third-Party PPAs.

Business Combinations

Acquisitions of a business are accounted by using the acquisition method of accounting. Assets acquired and liabilities assumed, including amounts attributed to noncontrolling interests, are recorded at the acquisition date at their fair values. Assigning fair values requires us to make significant estimates and assumptions regarding the fair value of identifiable intangible assets, property, plant and equipment, deferred tax asset valuation allowances and liabilities, such as uncertain tax positions and contingencies. We may refine these estimates if necessary over a period not to exceed one year by taking into consideration new information that, if known at the acquisition date, would have affected the fair values ascribed to the assets acquired and liabilities assumed.

Use of Estimates

The preparation of consolidated financial statements in conformity with U.S. GAAP requires us to make estimates and assumptions that affect the amounts reported in the consolidated financial statements and the accompanying notes. The most significant estimates include the determination of the stand-alone selling price, including material rights estimates, inventory valuation, specifically excess and obsolescence provisions for obsolete or unsellable inventory and, in relation to property, plant and equipment (specifically Energy Servers), assumptions relating to economic useful lives and impairment assessments.

Other accounting estimates include variable consideration relating to product performance guaranties, lease and non-lease components and related financing obligations such as incremental borrowing rates, estimated output, efficiency and residual value of the Energy Servers, product performance warranties and guaranties and extended maintenance, derivative valuations, estimates for recapture of the U.S. Investment Tax Credit (“ITC”) and similar federal tax benefits, estimates relating to contractual indemnities provisions, estimates for income taxes and deferred tax asset valuation allowances, stock-based compensation expense and estimates of fair value of preferred stock and equity and non-equity items in relation to the SK ecoplant strategic investment. In addition, certain of such estimates could require further judgment or modification and therefore carry a higher degree of variability and volatility. Actual results could differ materially from these estimates under different assumptions and conditions.

Concentration of Risk

Geographic Risk - The majority of our revenue for the year ended December 31, 2022 was attributable to operations in the Republic of Korea, and for the years ended December 31, 2021 and 2020 - to operations in the United States. A major portion of our long-lived assets is attributable to operations in the United States for all periods presented. In addition to shipments in the US and the Republic of Korea, we also ship our Energy Servers to other countries, primarily to Japan and India (the markets of the Republic of Korea, Japan and India, collectively referred to as the “Asia Pacific region”). In the years ended December 31, 2022, 2021 and 2020, total revenue in the Asia Pacific region was 44%, 38% and 35%, respectively, of our total revenue.

Credit Risk - At December 31, 2022, and 2021, one customer, accounted for approximately 75% and 60% of accounts receivable, respectively. To date, we have not experienced any credit losses.

Customer Risk - During the year ended December 31, 2022, revenue from two customers accounted for approximately 38% and 37% of our total revenue. During the year ended December 30, 2021, two customers represented approximately 43% and 11% of our total revenue. In the year ended December 31, 2020, revenue from two customers accounted for approximately 34% and 28% of our total revenue.

2. Summary of Significant Accounting Policies

Revenue Recognition

We primarily earn product and installation revenue from the sale and installation of our Energy Servers, service revenue by providing services under operations and maintenance services contracts, and electricity revenue by selling electricity to customers under PPAs and Managed Services Agreements (as defined below). We offer our customers several ways to finance their use of a Bloom Energy Server. Customers, including some of our international channel providers and Third Party PPAs, may choose to purchase our Energy Servers outright. Customers may also enter into contracts with us for the purchase of electricity generated by our Energy Servers (a “Managed Services Agreement”), which is then financed through one of our financing partners (“Managed Services Financings”), or as a traditional lease. Finally, customers may purchase electricity through our PPA Entities (“Portfolio Financings”).

Revenue Recognition under ASC 606 Revenue from Contracts with Customers

In applying Accounting Standards Codification 606, *Revenue from Contracts with Customers*, revenue is recognized by following a five-step process:

Identify the contract(s) with a customer. Evidence of a contract generally consists of an agreement, or a purchase order issued pursuant to the terms and conditions of a distributor, reseller, purchase, use and maintenance agreement, maintenance services agreements or energy supply agreement.

Identify the performance obligations in the contract. Performance obligations are identified in our contracts and primarily include transferring control of an Energy Server, installation of Energy Servers, providing maintenance services and maintenance services renewal options which, in certain situations, provide customers with material rights.

Determine the transaction price. The purchase price stated in an agreed-upon purchase order or contract is generally representative of the transaction price. When determining the transaction price, we consider the effects of any variable consideration, which include performance guarantees that may be payable to our customers.

Allocate the transaction price to the performance obligations in the contract. The transaction price in a contract is allocated based upon the relative standalone selling price of each distinct performance obligation identified in the contract.

Recognize revenue when (or as) we satisfy a performance obligation. We satisfy performance obligations either over time or at a point in time as discussed in further detail below. Revenue is recognized at the time the related performance obligation is satisfied by transferring control of the promised products or services to a customer.

We sometimes combine contracts governing the sale and installation of an Energy Server with the related maintenance services contracts and account for them as a single contract at contract inception to the extent the contracts are with the same customer. These contracts are not combined when the customer for the sale and installation of the Energy Server is different to the maintenance services contract customer. We also assess whether any contract terms including default provisions, put or call options result in components of our contracts being accounted for as financing or leasing transactions outside of the scope of ASC 606.

Most of our contracts contain performance obligations with a combination of our Energy Server product, installation and maintenance services. For these performance obligations, we allocate the total transaction price to each performance obligation based on the relative standalone selling price. Our maintenance services contracts are typically subject to renewal by customers on an annual basis. We assess these maintenance services renewal options at contract inception to determine whether they provide customers with material rights that give rise to separate performance obligations.

The total transaction price is determined based on the total consideration specified in the contract, including variable consideration in the form of a performance guaranty payment that represents potential amounts payable to customers. The expected value method is generally used when estimating variable consideration, which typically reduces the total transaction price due to the nature of the performance obligations to which the variable consideration relates. These estimates reflect our historical experience and current contractual requirements which cap the maximum amount that may be paid. The expected value method requires judgment and considers multiple factors that may vary over time depending upon the unique facts and circumstances related to each performance obligation. Depending on the facts and circumstances, a change in variable consideration estimate will either be accounted for at the contract level or using the portfolio method.

We exclude from the transaction price all taxes assessed by governmental authorities that are both (i) imposed on and concurrent with a specific revenue-producing transaction and (ii) collected from customers. Accordingly, such tax amounts are not included as a component of net sales or cost of sales. These tax amounts are recorded in cost of electricity revenue, cost of service revenue, and general and administrative operating expenses.

We allocate the transaction price to each distinct performance obligation based on relative standalone selling prices. Given that we typically sell an Energy Server together with the related installation and maintenance services, standalone selling prices are not directly observable. We estimate standalone selling prices by using a cost-plus approach. Costs relating to Energy Servers include all direct and indirect manufacturing costs, applicable overhead costs and costs for normal production inefficiencies (i.e., variances). We then apply a margin to the Energy Servers based on our Company's pricing strategy. As our business offerings and eligibility for the ITC evolve over time, we may be required to modify the expected margin in subsequent periods and our revenue could be materially affected. Costs relating to installation include all direct and indirect installation costs. The margin we apply reflects our profit objectives relating to installation. Costs for maintenance services arrangements are estimated over the life of the maintenance contracts and include estimated future material costs and non-material costs. Material costs over the period of the service arrangement are impacted significantly by the longevity of the fuel cells themselves. We apply a lower margin to our total service costs than to our Energy Servers as it best reflects our long-term service margin expectations and comparable historical industry service margins.

We generally recognize product and installation revenue at a point in time that the customer obtains control of the Energy Server. For certain instances, control of the installations is transferred to the customer over time, and the related revenue is recognized over time as the performance obligation is satisfied using the cost-to-cost (percentage-of-completion) method. We use an input measure of progress to determine the amount of revenue to be recognized during each reporting period. We

recognize maintenance services revenue, including revenue associated with any related customer material rights, over time as we perform service maintenance activities.

Amounts billed to customers for shipping and handling activities are considered contract fulfillment activities and not a separate performance obligation of the contract. Shipping and handling costs are recorded within cost of revenue.

The following is a description of the principal activities from which we generate revenue. Our four revenue streams are classified as follows:

Product Revenue - All of our product revenue is generated from the sale of our Energy Servers to direct purchase customers, including financing partners on Third-Party PPAs and sale-and-leaseback transactions, and international channel providers. We generally recognize product revenue from contracts with customers at the point that control is transferred to the customers. This occurs when we achieve customer acceptance, which depending on the contract terms is when the system is shipped and delivered to our customers, when the system is shipped and delivered and is physically ready for startup and commissioning, or when the system is shipped and delivered and is turned on and producing power.

Under our traditional lease financing option, we sell our Energy Servers through a direct sale to a financing partner who, in turn, leases the Energy Servers to the customer under a lease agreement. With our sales to our international channel providers, our international channel providers typically sell the Energy Servers to, or sometimes provide a PPA to, an end customer. In both traditional lease and international channel providers transactions, we contract directly with the end customer to provide extended maintenance services after the end of the standard warranty period. As a result, since the customer that purchases the server is a different and unrelated party to the customer that purchases extended warranty services, the product and maintenance services contract are not combined.

Installation Revenue - Nearly all of our installation revenue relates to the installation of Energy Servers sold to customers as part of a direct purchase and to financing parties as part of a traditional lease or Portfolio Financing. Generally, we recognize installation revenue when the system is physically ready for startup and commissioning, or when the system is turned on and producing power. For instances when control for installation services is transferred over time, we use an input measure of progress to determine the amount of revenue to recognize during each reporting period based on the costs incurred to satisfy the performance obligation.

Payments received from customers are recorded within deferred revenue and customer deposits in the consolidated balance sheets until control is transferred. The related cost of such product and installation is also deferred as a component of deferred cost of revenue in the consolidated balance sheets until control is transferred.

Service Revenue - Service revenue is generated from maintenance services agreements. As part of our initial contract with customers for the sale and installation of our Energy Servers, we typically provide a standard one-year warranty which covers defects in materials and workmanship and manufacturing or performance conditions under normal use and service for the first year following commencement of operations. As part of this standard first-year warranty, we also monitor the operations of the underlying systems and provide output and efficiency guaranties. We have determined that this standard first-year warranty is a distinct performance obligation - being a promise to stand-ready to maintain the Energy Servers when and if required during the first year following installation. We also sell to our customers extended annual maintenance services that effectively extend the standard first-year warranty coverage at the customer's option. These customers generally have an option to renew or cancel the extended maintenance services on an annual basis and nearly every customer has renewed historically. Similar to the standard first-year warranty, the optional extended annual maintenance services are considered a distinct performance obligation - being a promise to stand-ready to maintain the Energy Servers when and if required during the renewal service year.

Given our customers' renewal history, we anticipate that most of them will continue to renew their maintenance services agreements each year for the period of their expected use of the Energy Server. The contractual renewal price may be less than the standalone selling price of the maintenance services and consequently the contract renewal option may provide the customer with a material right. We estimate the standalone selling price for customer renewal options that give rise to material rights using the practical alternative by reference to optional maintenance services renewal periods expected to be provided and the corresponding expected consideration for these services. This reflects the fact that our additional performance obligations in any contractual renewal period are consistent with the services provided under the standard first-year warranty. Where we have determined that a customer has a material right as a result of their contract renewal option, we recognize that portion of the transaction price allocated to the material right over the period in which such rights are exercised.

Payments from customers for the extended maintenance contracts are generally received at the beginning of each service year. Accordingly, the customer payment received is recorded as a customer deposit and revenue is recognized over the related service period as the services are performed.

Electricity Revenue - We sell electricity produced by our Energy Servers owned directly by us or by our consolidated PPA Entities. Our PPA Entities purchase Energy Servers from us and sell electricity produced by these systems to customers through long-term PPAs. Customers are required to purchase all of the electricity produced by those Energy Servers at agreed-upon rates over the course of the PPAs' contractual term.

In addition, in certain Managed Services Financings pursuant to which we are party to a Managed Services Agreement with a customer in a sale-leaseback-sublease arrangement, we may recognize electricity revenue. We first determine whether the Energy Servers under the sale-leaseback arrangement of a Managed Services Financing were "integral equipment." As the Energy Servers were determined not to be integral equipment, we determine if the leaseback was classified as a financing lease or an operating lease.

We adopted ASC 842, *Leases* ("ASC 842"), with effect from January 1, 2020. Managed Services Financings entered prior to June 30, 2021, were accounted as failed sale-and-leaseback transactions because some financing agreements included repurchase option which prevented the transfer of control of the systems to the financier. Additionally, some of our leaseback agreements with financiers did not meet the criteria of operating leases that resulted in failed sale-and-leaseback transactions. We also determined that the sub-lease arrangements under the Managed Services Agreements with the customer are not within the scope of ASC 842 because the customer does not have the right to control the use of the underlying assets (i.e., the Energy Servers). Accordingly, such agreements are accounted for under ASC 606. Under ASC 606, we recognize customer payments for electricity as electricity revenue.

The transition guidance associated with ASC 842 also permitted certain practical expedients. We elected the practical expedient, which allowed us to carryforward certain aspects of our historical lease accounting under ASC 840 for leases that commenced before the effective date, including not to reassess (i) whether any expired or existing contracts are or contain leases, (ii) lease classification for any expired or existing leases, and (iii) initial direct costs for any existing leases. We also elected the practical expedient to not separate non-lease and lease components and instead account for them as a single lease component for all classes of underlying assets. Lastly, for all classes of underlying assets, we elected to adopt an accounting policy for which we will not record on our consolidated balance sheets leases whose terms are 12 months or less. Instead, these lease payments are recognized in profit or loss on a straight-line basis over the lease term.

During the second half of fiscal 2021 and 2022, we completed several successful sale-and-lease back transactions in which we transferred control of the Energy Server to the financier and leased it back as an operating lease to provide electricity to the end customer.

In order for the transaction to meet the criteria for sale-leaseback accounting, control of the Energy Servers must transfer to the financier, which requires, among other criteria, the leaseback to meet the criteria for an operating lease in accordance with ASC 842. Accordingly, for such transactions where control transfers and the leaseback is classified as an operating lease, the proceeds from the sale to the financier are recognized as revenue based on the fair value of the Energy Servers sold and are allocated between Product Revenue and Installation Revenue based on the relative standalone selling prices.

We recognize a lease liability for the Energy Server leaseback obligation based on the present value of the future payments to the financier that are attributed to the Energy Server leaseback using our incremental borrowing rate. We also record a right-of-use asset, which is amortized over the term of the leaseback, and is included as a cost of electricity revenue on the consolidated statements of operations.

For certain sale-leaseback transactions, we receive proceeds from the financier in excess of the fair value of the Energy Servers in order to finance our ongoing costs associated with the operation of the Energy Servers during the term of the end customer agreement to provide electricity. Such proceeds are recognized as a financing obligation.

We allocate payments we are obligated to make under the leaseback agreement with the financier between the lease liability and the financing obligation based on the proportion of the financing obligation to the total proceeds to be received.

We recognize revenue from the satisfaction of performance obligations under our PPAs and Managed Services Financings to provide electricity to our end customers as the electricity is provided over the term of the agreement in the amount invoiced, which reflects the amount of consideration to which we have the right to invoice and which corresponds to the value transferred under such arrangements.

Modifications

Contract modifications are accounted for as separate contracts if the additional products and services are distinct and priced at standalone selling prices. If the additional products and services are distinct, but not priced at standalone selling prices, the modification is treated as a termination of the existing contract and the creation of a new contract. If the additional products and services are not distinct within the context of the contract, the modification is combined with the original contract and either an increase or decrease in revenue is recognized on the modification date.

Deferred Revenue

We recognize a contract liability (referred to as deferred revenue in our consolidated financial statements) when we have an obligation to transfer products or services to a customer in advance of us satisfying a performance obligation and the contract liability is reduced as performance obligations are satisfied and revenue is recognized. The related cost of such product is deferred as a component of deferred cost of revenue in the consolidated balance sheets. Prior to shipment of the product or the commencement of performance of maintenance services, any prepayment made by the customer is recorded as a customer deposit. Deferred revenue related to material rights for options to renew are recognized in revenue over the maintenance services period.

A description of the principal activities from which we recognize cost of revenues associated with each of our revenue streams are classified as follows:

Cost of Product Revenue - Cost of product revenue consists of costs of our Energy Servers that we sell to direct purchase, including financing partners on Third-Party PPAs, international channel providers and traditional lease customers. It includes costs paid to our materials suppliers, direct labor, manufacturing and other overhead costs, shipping costs, provisions for excess and obsolete inventory and the depreciation costs of our equipment. For Energy Servers sold to customers pending installation, we provide warranty reserves as a part of product costs for the period from transfer of control of Energy Servers to commencement of operations.

Cost of Installation Revenue - Cost of installation revenue primarily consists of the costs to install our Energy Servers that we sell to direct purchase, including financing partners on Third-Party PPAs and traditional lease customers. It includes cost of materials and service providers, personnel costs, shipping costs and allocated costs.

Cost of Service Revenue - Cost of service revenue consists of costs incurred under maintenance service contracts for all customers. It includes personnel costs for our customer support organization, certain allocated costs, and extended maintenance-related product repair and replacement costs.

Cost of Electricity Revenue - Cost of electricity revenue primarily consists of the depreciation of the cost of the Energy Servers owned by us or the consolidated PPA Entities. The cost of electricity revenue is generally recognized over the term of the Managed Services Agreement or customer's PPA contract.

Revenue Recognized from Portfolio Financings Through PPA Entities (See Note 11 - Portfolio Financings)

In 2010, we began selling our Energy Servers to tax equity partnerships in which we held an equity interest as a managing member, or a PPA Entity. The investors in a PPA Entity contribute cash to the PPA Entity in exchange for an equity interest, which then allows the PPA Entity to purchase the Operating Company and the Energy Servers.

The cash contributions held are classified as short-term or long-term restricted cash according to the terms of each PPA Entity's governing documents. As we identified customers, the Operating Company entered into a PPA with the customer pursuant to which the customer agreed to purchase the power generated by one or more Energy Servers at a specified rate per kilowatt hour for a specified term, which can range from 10 to 21 years. The Operating Company, wholly owned by the PPA Entity, typically entered into a maintenance services agreement with us following the first year of service to extend the standard one-year performance warranties and guaranties. This intercompany arrangement is eliminated on consolidation. Those PPAs that qualify as leases are classified as either sales-type leases or operating leases and those that do not qualify as leases are classified as tariff agreements or revenue arrangements with customers. For arrangements classified as operating leases, tariff agreements, or revenue arrangements with customers, income is recognized as contractual amounts are due when the electricity is generated and presented within electricity revenue on the consolidated statements of operations.

In June 2022 and November 2022, we completed the repowering of PPA IIIa and PPA IV, respectively. Please refer to Note 11 - *Portfolio Financings* for details.

Sales-type Leases - Certain Portfolio Financings with PPA Entities entered into prior to our adoption of ASC 842 qualified as sales-type leases in accordance with ASC 840. The classification for such arrangements were carried over and accounted for as sales-type leases under ASC 842.

As the Portfolio Financings through PPA Entities entered into prior to our adoption of ASC 842 contain a lease, the consideration received is allocated between the lease elements (lease of property and related executory costs) and non-lease elements (other products and services, excluding any derivatives) based on relative fair value. Lease elements include the leased system and the related executory costs (i.e. installation of the system, electricity generated by the system, maintenance costs). Non-lease elements include service, fuel and interest related to the leased systems.

Service revenue is recognized over the term of the PPA as electricity is generated. For those transactions that contain a lease, the interest component related to the leased system is recognized as interest revenue over the life of the lease term. The customer has the option to purchase the Energy Servers at the then fair market value at the end of the PPA contract term.

Service revenue related to sales-type leases of \$0.4 million, \$2.3 million and \$2.3 million for the years ended December 31, 2022, 2021 and 2020, respectively, is included in service revenue in the consolidated statements of operations. We have not entered into any new Portfolio Financing arrangements through PPA Entities during the last three years.

Operating Leases - Certain Portfolio Financings with PPA Entities entered into prior to the adoption of ASC 842 that were deemed leases in substance but did not meet the criteria of sales-type leases or direct financing leases in accordance with ASC 840, were accounted for as operating leases. The classification for such arrangements were carried over and accounted for as operating leases under ASC 842. Revenue under these arrangements is recognized as electricity sales and service revenue and is provided to the customer at rates specified under the PPAs. During the years ended December 31, 2022, 2021 and 2020, revenue from electricity sales from these Portfolio Financings with PPA Entities amounted to \$25.9 million, \$28.6 million and \$27.7 million, respectively. During the years ended December 31, 2022, 2021 and 2020, service revenue amounted to \$13.1 million, \$14.6 million, and \$13.8 million, respectively.

Investment Tax Credits - Through December 31, 2016, our Energy Servers were eligible for federal ITCs that accrued to eligible property under Internal Revenue Code Section 48. Under our Portfolio Financings with PPA Entities, ITCs are primarily passed through to Equity Investors with approximately 1% to 10% of incentives received by us. These incentives are accounted for by using the flow-through method. On February 9, 2018, the U.S. Congress passed legislation to extend the federal ITCs for fuel cell systems applicable retroactively to January 1, 2017. On December 21, 2020, the U.S. Congress passed legislation to extend the federal ITCs at a rate of 26% for a further two years.

The ITC program has operational criteria for the first five years after the qualified equipment is placed in service. If the qualified energy property is disposed of or otherwise ceases to be investment credit property before the close of the five-year recapture period is fulfilled, it could result in a partial reduction of the federal tax incentives. No recapture has occurred during the years ended December 31, 2022 and 2021.

On August 7, 2022, the U.S. Senate passed the IRA under the fiscal year 2022 budget reconciliation instructions. On August 16, 2022, the IRA was signed into law. This new bill became the U.S. federal government's largest-ever investment to fight climate change. The IRA includes numerous investments in climate protection, among them the extension and expansion of the ITC and the Production Tax Credit, the addition of expanded tax credits for other technologies and for manufacturing of clean energy equipment, as well as terms allowing parties to more easily monetize the tax credits. The IRA contains a two-tiered credit-amount structure for many applicable tax credits. Specifically, many of the credits have a lower base credit amount that can be increased up to five times if the taxpayer can satisfy applicable prevailing wage or apprenticeship requirements. The IRA also creates certain bonus tax credit amounts relevant to Bloom products placed in service in 2023 and 2024, available by satisfying domestic content criteria and/or locating within an "energy community," as defined by the IRA. The IRA also creates tax credit for the production of hydrogen and carbon capture. By implementing the IRA, the government aims to make an impact on energy markets so that cleaner options are more affordable to consumers.

On August 16, 2022, the IRA enacted provisions to enable our Energy Servers being qualified for 30% or more ITCs. If a contract consideration subject to changes due to the underlying ITC rate assumption changes, we will consider such potential ITC benefit changes as a variable consideration and will generally estimate the variable consideration by using the most likely amount method. When recognizing revenue, we will constrain the estimate of variable consideration to an amount that is not probable of a significant revenue reversal.

Recapture of Federal Tax Incentives, Including the Investment Tax Credit

Our Energy Servers are eligible for federal ITCs that accrued to qualified property under Internal Revenue Code Section 48 when placed into service. However, the ITC program has operational criteria that extend for five years. If the energy property is disposed of or otherwise ceases to be qualified investment credit property before the close of the five year recapture period is fulfilled, it could result in a partial reduction of the ITC. Our sale of Energy Servers to PPA Entities and pursuant to Third-Party PPAs, in each case pursuant to a Portfolio Financing, generates ITCs benefiting the third party owners of the PPA Entities or tax equity partnerships (the tax equity partnership purchaser, an “Investment Company”) and, therefore, the third party owners of the PPA Entities or Investment Companies, as the case may be, bear the risk of recapture if the assets placed in service do not meet the ITC operational criteria in the future.

Warranty Costs

We generally warrant our products sold to our customers, international channel providers, and financing parties for the first year following the date of acceptance of the Energy Servers. This standard warranty covers defects in materials, workmanship and manufacturing or performance conditions under normal use and service conditions for the first year following acceptance or for the optional extended annual maintenance services period.

We recognize warranty costs for those contracts that are considered to be assurance-type warranties and consequently do not give rise to performance obligations or for those maintenance service contracts that were previously in the scope of ASC 605-20-25, *Separately Priced Extended Warranty and Product Maintenance Contracts*.

In addition, as part of our standard one-year warranty and Managed Services Agreements obligations, we monitor the operations of the underlying systems and provide output and efficiency guaranties (collectively “product performance guaranties”). If the Energy Servers run at a lower efficiency or power output than we committed under our performance warranty or guaranty, we will reimburse the customer for this underperformance. Our performance obligation includes ensuring the Energy Server operates at least at the efficiency and/or power output levels set forth in the customer agreement. Our aggregate reimbursement obligation for a performance guaranty for each customer is capped based on the purchase price of the underlying Energy Server. Product performance guaranty payments are accounted for as a reduction in service revenue. We accrue for performance guaranties based on the estimated amounts reimbursable at each reporting period and recognize the costs as a reduction to revenue.

Shipping and Handling Costs

We generally record costs related to shipping and handling in cost of product revenue, cost of installation revenue and cost of service as they are incurred.

Sales and Utility Taxes

We recognize revenue on a net basis for taxes charged to our customers and collected on behalf of the taxing authorities.

Operating Expenses

Advertising and Promotion Costs - Expenses related to advertising and promotion of products are charged to sales and marketing expense as incurred. We did not incur any material advertising or promotion expenses during the years ended December 31, 2022 and 2021.

Research and Development - We conduct internally funded research and development activities to improve anticipated product performance and reduce product life-cycle costs. Research and development costs are expensed as incurred and include salaries and expenses related to employees conducting research and development.

Stock-Based Compensation - We account for stock options, restricted stock units (“RSUs”) and performance-based stock units (“PSUs”) awarded to employees and non-employee directors under the provisions of ASC 718, *Compensation-Stock Compensation*.

Stock-based compensation costs for options are measured using the Black-Scholes valuation model. The Black-Scholes valuation model uses as inputs the fair value of our common stock and assumptions we make for the volatility of our common stock, the expected term of the award, the risk-free interest rate for a period that approximates the expected term of the stock options and the expected dividend yield. In developing estimates used to calculate assumptions, we established the expected term for employee options as well as expected forfeiture rates based on the historical settlement experience and after giving

consideration to vesting schedules. For options with a vesting condition tied to the attainment of service and market conditions, stock-based compensation costs are recognized using Monte Carlo simulations. Stock-based compensation costs are recorded net of estimated forfeitures such that expense is recorded only for those stock-based awards that are expected to vest. We typically record stock-based compensation costs for options under the straight-line attribution method over the requisite service period, which is generally the vesting term, which is generally four years for options.

Stock-based compensation costs for RSUs and PSUs are measured based on the fair value of the underlying shares on the date of grant. We recognize the compensation cost for RSUs using a straight-line basis over the requisite service period of the RSUs, which is generally three to four years. We recognize the compensation cost for PSUs over the expected performance period using the graded vesting method as the achievement of the milestones become probable, which is generally one to three years.

We also use the Black-Scholes valuation model to estimate the fair value of stock purchase rights under the Bloom Energy Corporation 2018 Employee Stock Purchase Plan (the “2018 ESPP”). The fair value of the 2018 ESPP purchase rights is recognized as expense under the multiple options approach. Forfeitures are estimated at the time of grant and revised in subsequent periods, if necessary, if actual forfeitures differ from initial estimates.

Stock issued to grantees in our stock-based compensation is from authorized and previously unissued shares. Stock-based compensation expense is recorded in the consolidated statements of operations based on the employees’ respective function. Stock-based compensation costs directly associated with the product manufacturing operations process are capitalized into inventory and expensed when the capitalized asset is used in the normal course of the sales or services process.

We record deferred tax assets for awards that result in deductions on our income tax returns, unless we cannot realize the deduction (i.e., we are in a net operating loss position), based on the amount of compensation cost recognized and our statutory tax rate.

Refer to Note 10 - *Stock-Based Compensation and Employee Benefit Plans* for further discussion of our stock-based compensation arrangements.

Income Taxes

We account for income taxes using the liability method under ASC 740, *Income Taxes* (“ASC 740”). Under this method, deferred tax assets and liabilities are determined based on net operating loss carryforwards, research and development credit carryforwards and temporary differences resulting from the different treatment of items for tax and financial reporting purposes. Deferred items are measured using the enacted tax rates and laws that are expected to be in effect when the differences reverse. Additionally, we must assess the likelihood that deferred tax assets will be recovered as deductions from future taxable income. We have provided a full valuation allowance on our domestic deferred tax assets because we believe it is more likely than not that our deferred tax assets will not be realized.

We follow the accounting guidance in ASC 740, which requires a more-likely-than-not threshold for financial statement recognition and measurement of tax positions taken or expected to be taken in a tax return. We record a liability for the difference between the benefit recognized and measured pursuant to ASC 740-10 and the tax position taken or expected to be taken on our tax return. To the extent that the assessment of such tax positions changes, the change in estimate is recorded in the period in which the determination is made. We established reserves for tax-related uncertainties based on estimates of whether, and the extent to which, additional taxes will be due. These reserves are established when we believe that certain positions might be challenged despite our belief that the tax return positions are fully supportable. The reserves are adjusted in light of changing facts and circumstances such as the outcome of a tax audit. The provision for income taxes includes the impact of reserve provisions and changes to reserves that are considered appropriate. We recognize interest and penalties related to unrecognized tax benefits in income tax expense.

Refer to Note 15 - *Income Taxes* for further discussion of our income tax expense.

Comprehensive Loss

Our comprehensive loss is comprised of net loss attributable to Class A and Class B common stockholders, unrealized loss on available-for-sale securities, change in derivative instruments designated and qualifying as cash flow hedges, foreign currency translation adjustment and comprehensive loss attributable to noncontrolling interest and redeemable noncontrolling interest.

Fair Value Measurement

ASC 820, *Fair Value Measurements and Disclosures* (“ASC 820”), defines fair value, establishes a framework for measuring fair value under U.S. GAAP and enhances disclosures about fair value measurements. Fair value is defined under ASC 820 as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principle or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. Valuation techniques used to measure fair value under ASC 820 must maximize the use of observable inputs and minimize the use of unobservable inputs. The guidance describes a fair value hierarchy based on three levels of inputs, of which the first two are considered observable and the last unobservable, that may be used to measure fair value:

- Level 1** Quoted prices in active markets for identical assets or liabilities. Financial assets utilizing Level 1 inputs typically include money market securities and U.S. Treasury securities.
- 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 or liabilities. Financial liabilities utilizing Level 2 inputs are represented by SK ecoplant option to acquire a variable number of shares of Class A common stock and its valuation is performed with the help of a Monte Carlo simulation model using a stochastic volatility parameter, which is calibrated and considers the observable implied volatility, the stock price of our Class A Common Stock and market interest rates.
- Level 3** Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities. Financial liabilities utilizing Level 3 inputs include contract embedded derivatives. Their valuations are performed using a Monte Carlo simulation model which considers various potential electricity price curves over the sales contract terms.

Other Balance Sheet Components

Cash, Cash Equivalents and Restricted Cash - Cash equivalents consist of highly liquid short-term investments with maturities of 90 days or less at the date of purchase.

Restricted cash is held as collateral to provide financial assurance that we will fulfill obligations and commitments primarily related to our Portfolio Financings, Third Party PPA and Managed Services Agreements. Restricted cash also includes debt service reserves, maintenance service reserves and facility lease agreements. Restricted cash that is expected to be used within one year of the balance sheet date is classified as a current asset, whereas restricted cash expected to be used more than one year from the balance sheet date is classified as a non-current asset.

Derivatives - We account for our derivative instruments as either an asset or a liability which are carried at fair value on the consolidated balance sheets. Changes in the fair value of the derivatives that are designated and qualify as cash flow hedges are recorded in accumulated other comprehensive income (loss) on the consolidated balance sheets. Changes in fair value of those derivatives that no longer qualify as cash flow hedges or are derivatives that do not qualify for hedge accounting are recorded through earnings in the consolidated statements of operations.

Customer Financing Receivables - The contractual terms of our customer financing receivables are primarily contained within the PPA Entities’ customer lease agreements. Leases entered into prior to our adoption of ASC 842 carried over their classification as either operating or sales-type leases in accordance with the relevant accounting guidelines. Customer financing receivables were generated by Energy Servers leased to PPA Entities’ customers in leasing arrangements that qualified and continue to be accounted for as sales-type leases. Customer financing receivables for such arrangements represent the gross minimum lease payments to be received from customers and the system’s estimated residual value, net of unearned income and allowance for estimated losses. Initial direct costs for such sales-type leases continued to be recognized as cost of revenue when the Energy Servers were placed in service.

We record a reserve for credit losses related to the collectability of customer financing receivables using the historical aging of the customer receivable balance. The collectability is determined based on past events, including historical experience, customer credit rating, as well as current market conditions. We monitor customer ratings and collectability on an on-going basis. Account balances are charged off against the credit loss reserve, when needed, after all means of collection have been exhausted and the potential for recovery is considered remote.

With the PPA IIIa repowering of energy servers in June 2022 (refer to Note 11 - *Portfolio Financings*) customer financing receivables were reclassified to property, plant and equipment, net, impaired and written off.

Accounts Receivable - Accounts receivable primarily represents trade receivables from sales to customers recorded at amortized cost less allowance for credit losses. The allowance for credit losses reflects our best estimate about future losses over the contractual life of outstanding accounts receivable taking into consideration historical experience, specific allowances for known troubled accounts, other currently available information including customer financial condition, and both current and forecasted economic conditions.

Inventories - Inventories consist principally of raw materials, work-in-process and finished goods and are stated on a first-in, first-out basis at the lower of cost or net realizable value. We record inventory excess and obsolescence provisions for estimated obsolete or unsellable inventory, equal to the difference between the cost of inventory and estimated net realizable value based upon assumptions about market conditions and future demand for product generally expected to be utilized over the next 12 to 24 months, including product needed to fulfill our warranty obligations. If actual future demand for our products is less than currently forecasted, additional inventory provisions may be required. Once a provision is recorded, it is maintained until the product to which it relates to is sold or otherwise disposed.

Property, Plant and Equipment - Property, plant and equipment, including leasehold improvements, are stated at cost less accumulated depreciation. Energy Servers are depreciated to their residual values over their useful economic lives which reflect consideration of the terms of their related PPA and tariff agreements. These useful lives are reassessed when there is an expected change in the use of the Energy Servers. Leasehold improvements are depreciated over the shorter of the lease term or their estimated depreciable lives. Buildings are amortized over the shorter of the lease or property term or their estimated depreciable lives. Assets under construction are capitalized as costs are incurred and depreciation commences after the assets are put into service within their respective asset class.

Depreciation is calculated using the straight-line method over the estimated depreciable lives of the respective assets as follows:

	Depreciable Lives
Energy Servers	15-21 years
Computers, software and hardware	3-5 years
Machinery and equipment	5-10 years
Furniture and fixtures	3-5 years
Leasehold improvements	1-10 years
Buildings	*

* Lesser of 35 years or the term of the underlying land lease.

When assets are retired or disposed, the assets and related accumulated depreciation and amortization are removed from our consolidated financial statements and the resulting gain or loss is reflected in the consolidated statements of operations.

Impairment of Long-Lived Assets - Our long-lived assets include property, plant and equipment and Energy Servers capitalized in connection with our Managed Services Financing Program, Portfolio Financings and other similar arrangements. The carrying amounts of our long-lived assets are periodically reviewed for impairment whenever events or changes in circumstances indicate that the carrying value of these assets may not be recoverable or that the useful life is shorter than originally estimated. Impairment charges for year ended December 31, 2022, amounted to \$44.8 million and \$64.0 million related to the PPA IIIa Upgrade and PPA IV Upgrade, respectively (see Note 11 - *Portfolio Financings*). We did not have impairment charges for the year ended December 31, 2021 and 2020.

Redeemable Convertible Preferred Stock - We issued RCPS on December 29, 2021 that was recorded as mezzanine equity on our consolidated balance sheets because there are certain redemption provisions upon liquidation, dissolution, or deemed liquidation events (which include a change in control and the sale or other disposition of all or substantially all of our assets), which are considered contingent redemption provisions that are not solely within our control. We recorded the RCPS at fair value upon issuance, net of any issuance costs. On November 8, 2022, each share of Series A Preferred Stock was converted into 10,000,000 shares of Class A common stock. For additional information, see Note 17 - *SK ecoplant Strategic Investment*.

Allocation of Profits and Losses of Consolidated Entities to Noncontrolling Interests - We generally allocate profits and losses to noncontrolling interests under the hypothetical liquidation at book value (“HLBV”) method. The determination of equity in earnings under the HLBV method requires management to determine how proceeds, upon a hypothetical liquidation of the entity at book value, would be allocated between our investors. The noncontrolling interest balance is presented as a component of permanent equity in the consolidated balance sheets.

For income tax purposes, the Equity Investors of the PPA Entities receive a greater proportion of the share of losses and other income tax benefits. This includes the allocation of investment tax credits which are distributed to the Equity Investors through an Investment Company subsidiary of Bloom. Allocations are initially based on the terms specified in each respective partnership agreement until either a specific date or the Equity Investors’ targeted rate of return specified in the partnership agreement is met (the “flip” of the flip structure) whereupon the allocations change. In some cases, after the Equity Investors receive their contractual rate of return, we receive substantially all of the remaining value attributable to the long-term recurring customer payments and the other incentives.

Foreign Currency Considerations

Items included in the financial statements of each of the Company’s entities are measured using the currency of the primary economic environment in which the entity operates (the “functional currency”). The functional currency of the Company’s parent entity is the U.S. dollar.

Functional currencies of our foreign subsidiaries are local currencies. The functional currency of our joint venture in the Republic of Korea is the local currency, the South Korean won (“KRW”), since the joint venture is financially independent of its U.S. parent and the KRW is the currency in which the joint venture generates and expends cash. Assets and liabilities of these entities are translated at the rate of exchange at the balance sheet date. Revenue and expenses are translated at the weighted average rate of exchange during the period. For these entities, translation adjustments resulting from the process of translating the local currency financial statements into U.S. dollars are included in other comprehensive loss. Translation adjustments attributable to noncontrolling interests are allocated to and reported as part of the noncontrolling interests in the consolidated financial statements.

Transactions made in a currency other than the functional currency are remeasured to the functional currency at exchange rates at the dates of the transactions. Monetary assets and liabilities denominated in foreign currencies at the reporting date are remeasured to the functional currency at the exchange rate at that date and non-monetary assets and liabilities are measured at historical rates. Foreign currency transaction gains and losses are included as a component of other expense in our consolidated statements of operations.

The reporting currency for these consolidated financial statements is U.S. dollar.

Accounting Guidance Not Yet Adopted

Contract Assets and Contract Liabilities Acquired in a Business Combination - In October 2021, the FASB issued ASU 2021-08, *Business Combinations (Topic 805): Accounting for Contract Assets and Contract Liabilities from Contracts with Customers* (“ASU 2021-08”), which requires contract assets and contract liabilities acquired in a business combination to be recognized and measured by the acquirer on the acquisition date in accordance with ASC 606, *Revenue from Contracts with Customers*, as if it had originated the contracts. This approach differs from the current requirement to measure contract assets and contract liabilities acquired in a business combination at fair value. ASU 2021-08 is effective for fiscal years, including interim periods within those fiscal years, beginning after December 15, 2022. The standard does not impact acquired contract assets or liabilities from business combinations occurring prior to the adoption date.

3. Revenue Recognition

Contract Balances

The following table provides information about accounts receivables, contract assets, customer deposits and deferred revenue from contracts with customers (in thousands):

	December 31,	
	2022	2021
Accounts receivable	\$ 250,995	\$ 87,788
Contract assets	46,727	25,201
Customer deposits	121,085	64,809
Deferred revenue	94,355	115,476

Contract assets relate to contracts for which revenue is recognized upon transfer of control of performance obligations, however billing milestones have not been reached. Customer deposits and deferred revenue are payments received from customers or invoiced amounts prior to transfer of controls of performance obligations. Customer deposits include \$24.6 million related to transactions with SK ecoplant and refundable fees received from customers.

Contract assets and contract liabilities are reported in a net position on an individual contract basis at the end of each reporting period. Contract assets are classified as current in the consolidated balance sheet when both the milestones other than the passage of time are expected to be complete and the customer is invoiced within one year of the balance sheet date, and as long-term when both the above-mentioned milestones are expected to be complete, and the customer is invoiced more than one year out from the balance sheet date. Contract liabilities are classified as current in the consolidated balance sheet when the revenue recognition associated with the related customer payments and invoicing is expected to occur within one year of the balance sheet date and as long-term when the revenue recognition associated with the related customer payments and invoicing is expected to occur in more than one year from the balance sheet date.

Contract Assets

	Years Ended December 31,	
	2022	2021
Beginning balance	\$ 25,201	\$ 3,327
Transferred to accounts receivable from contract assets recognized at the beginning of the period	(20,250)	(1,198)
Revenue recognized and not billed as of the end of the period	41,776	23,072
Ending balance	<u>\$ 46,727</u>	<u>\$ 25,201</u>

Deferred Revenue

Deferred revenue activity, including deferred incentive revenue activity, during the years ended December 31, 2022 and 2021 consisted of the following (in thousands):

	Years Ended December 31,	
	2022	2021
Beginning balance	\$ 115,476	\$ 135,578
Additions	1,001,404	916,604
Revenue recognized	(1,022,525)	(936,706)
Ending balance	<u>\$ 94,355</u>	<u>\$ 115,476</u>

Deferred revenue is equivalent to the total transaction price allocated to the performance obligations that are unsatisfied, or partially unsatisfied, as of the end of the period. The significant component of deferred revenue at the end of the period consists of performance obligations relating to the provision of maintenance services under current contracts and future renewal periods. Some of these obligations provide customers with material rights over a period that we estimate will be largely commensurate with the period of their expected use of the associated Energy Server. As a result, we expect to recognize these amounts as revenue over a period of up to 21 years, predominantly on a relative standalone selling price basis that reflects the cost of providing these services. Deferred revenue also includes performance obligations relating to product acceptance and installation. A significant amount of this deferred revenue is reflected as additions and revenue recognized in the same 12-month period, and a portion of this deferred revenue is expected to be recognized beyond 12-month period mainly due to deployment schedules.

We do not disclose the value of the unsatisfied performance obligations for (i) contracts with an original expected length of one year or less and (ii) contracts for which we recognize revenue at the amount to which we have the right to invoice for services performed.

Disaggregated Revenue

We disaggregate revenue from contracts with customers into four revenue categories: product, installation, services and electricity (in thousands):

	Years Ended December 31,		
	2022	2021	2020
Revenue from contracts with customers:			
Product revenue	\$ 880,664	\$ 663,512	\$ 518,633
Installation revenue	92,120	96,059	101,887
Services revenue	150,954	144,184	109,633
Electricity revenue	11,608	3,103	1,071
Total revenue from contract with customers	1,135,346	906,858	731,224
Revenue from contracts that contain leases:			
Electricity revenue	63,779	65,318	63,023
Total revenue	\$ 1,199,125	\$ 972,176	\$ 794,247

4. Financial Instruments

Cash, Cash Equivalents and Restricted Cash

The carrying values of cash, cash equivalents and restricted cash approximate fair values and were as follows (in thousands):

	December 31,	
	2022	2021
As Held:		
Cash	\$ 226,463	\$ 318,080
Money market funds	291,903	297,034
	<u>\$ 518,366</u>	<u>\$ 615,114</u>
As Reported:		
Cash and cash equivalents	\$ 348,498	\$ 396,035
Restricted cash	169,868	219,079
	<u>\$ 518,366</u>	<u>\$ 615,114</u>

Restricted cash consisted of the following (in thousands):

	December 31,	
	2022	2021
Current:		
Restricted cash	\$ 50,965	\$ 89,462
Restricted cash related to PPA Entities ¹	550	3,078
	<u>51,515</u>	<u>92,540</u>
Non-current:		
Restricted cash	110,353	103,300
Restricted cash related to PPA Entities ¹	8,000	23,239
	<u>118,353</u>	<u>126,539</u>
	<u>\$ 169,868</u>	<u>\$ 219,079</u>

¹ We have VIEs related to PPAs that represent a portion of the consolidated balances recorded within the “restricted cash” and other financial statement line items in the consolidated balance sheets (see Note 11 - *Portfolio Financings*). In addition, the restricted cash held in the PPA II and PPA IIIB entities as of December 31, 2022, includes \$40.6 million and \$1.2 million of current restricted cash, respectively, and \$28.5 million and \$6.7 million of non-current restricted cash, respectively. The restricted cash held in the PPA II and PPA IIIB entities as of December 31, 2021, includes \$41.7 million and \$1.2 million of current restricted cash, respectively, and \$57.7 million and \$6.7 million of non-current restricted cash, respectively. These entities are not considered VIEs.

Factoring Arrangements

We sell certain customer trade receivables on a non-recourse basis under factoring arrangements with our designated financial institution. These transactions are accounted for as sales and cash proceeds are included in cash used in operating activities. We derecognized \$283.3 million and \$116.3 million of accounts receivable during the years ended December 31, 2022 and 2021, respectively. The cost of factoring such accounts receivable on our consolidated statements of operations for the year ended December 31, 2022 was \$4.0 million. The cost of factoring such accounts receivable on our consolidated statements of operations for the year ended December 31, 2021 was not material.

The cost of factoring is recorded in general and administrative expenses.

5. Fair Value

Our accounting policy for the fair value measurement of cash equivalents is described in Note 2 - *Summary of Significant Accounting Policies*.

Financial Assets and Liabilities Measured at Fair Value on a Recurring Basis

The tables below set forth, by level, our financial assets that are accounted for at fair value for the respective periods. The table does not include assets and liabilities that are measured at historical cost or any basis other than fair value (in thousands):

December 31, 2022	Fair Value Measured at Reporting Date Using			
	Level 1	Level 2	Level 3	Total
Assets				
Cash equivalents:				
Money market funds	\$ 291,903	\$ —	\$ —	\$ 291,903
	<u>\$ 291,903</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 291,903</u>
Liabilities				
Derivatives:				
Embedded EPP derivatives	—	—	5,895	5,895
	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 5,895</u>	<u>\$ 5,895</u>

December 31, 2021	Fair Value Measured at Reporting Date Using			
	Level 1	Level 2	Level 3	Total
Assets				
Cash equivalents:				
Money market funds	\$ 297,034	\$ —	\$ —	\$ 297,034
	<u>\$ 297,034</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 297,034</u>
Liabilities				
Derivatives:				
Option to acquire a variable number of shares of Class A Common Stock	\$ —	\$ 13,200	\$ —	\$ 13,200
Embedded EPP derivatives	—	—	6,461	6,461
	<u>\$ —</u>	<u>\$ 13,200</u>	<u>\$ 6,461</u>	<u>\$ 19,661</u>

Money Market Funds - Money market funds are valued using quoted market prices for identical securities and are therefore classified as Level 1 financial assets.

Option to Acquire a Variable Number of Shares of Class A Common Stock - We estimated the fair value of SK ecoplant's option to acquire a variable number of shares of Class A common stock (the "Option") using a Monte Carlo simulation model using a stochastic volatility parameter, which is calibrated and considers the observable implied volatility, the stock price of our Class A Common Stock and market interest rates. As the fair value is determined based on observable inputs, the Option to acquire a variable number of shares of Class A common stock is classified as a Level 2 financial liability. The fair value of the Option was reflected in accrued expenses and other current liabilities in our consolidated balance sheet as of December 31, 2021.

SK ecoplant Notice to Exercise the Option to Acquire a Variable Number of Shares of Class A Common Stock - On August 10, 2022, pursuant to the SPA, SK ecoplant notified us of its intent to exercise its option to purchase additional shares of our Class A common stock, pursuant to a Second Tranche Exercise Notice (as defined in the SPA), and it elected to purchase

13,491,701 shares at a purchase price of \$23.05 per share. Upon receipt of SK ecoplant's notice the Option was no longer accounted for as liability. Please refer to Note 17 - *SK ecoplant Strategic Investment* for details.

Natural Gas Fixed Price Forward Contracts - Our natural gas fixed price forward contracts were valued using a combination of factors including the counterparty's credit rating and estimates of future natural gas prices. The leveling of each financial instrument is reassessed at the end of each period and is based on pricing information received from third-party pricing sources. As of December 31, 2021, our remaining natural gas fixed price forward contracts had no fair value. In March 2022, these contracts expired. As of December 31, 2022, we did not have any natural gas fixed price forward contracts.

The following table provides the number and fair value of our natural gas fixed price forward contracts (in thousands):

	December 31, 2022		December 31, 2021	
	Number of Contracts (MMBTU) ²	Fair Value	Number of Contracts (MMBTU) ²	Fair Value
Liabilities¹:				
Natural gas fixed price forward contracts (not under hedging relationships)	—	\$ —	88	\$ —

¹ Recorded in current liabilities and derivative liabilities in the consolidated balance sheets.

² One MMBTU is a traditional unit of energy used to describe the heat value (energy content) of fuels.

For the years ended December 31, 2022, 2021 and 2020, we recognized no unrealized gain/loss, an unrealized gain of \$1.1 million and an unrealized loss of \$0.1 million, respectively. We realized no gain/loss, gains of \$1.5 million, and gains of \$4.5 million for the years ended December 31, 2022, 2021 and 2020, respectively, on the settlement of these contracts in cost of revenue on our consolidated statements of operations.

Embedded Escalation Protection Plan Derivative Liability in Sales Contracts - We estimate the fair value of the embedded EPP derivatives in certain sales contracts using a Monte Carlo simulation model, which considers various potential electricity price curves over the sales contracts' terms. We use historical grid prices and available forecasts of future electricity prices to estimate future electricity prices. We have classified these derivatives as a Level 3 financial liability.

For the years ended December 31, 2022, 2021 and 2020 we recorded the fair value of the embedded EPP derivatives with no material unrealized gains or losses recorded in either of the three years ended December 31, 2022, 2021 and 2020 in our consolidated statements of operations.

	Natural Gas Fixed Price Forward Contracts	Embedded EPP Derivative Liability	Total
Liabilities at December 31, 2020	\$ 2,574	\$ 5,542	\$ 8,116
Changes in fair value	(2,574)	919	(1,655)
Liabilities at December 31, 2021	—	6,461	6,461
Changes in fair value	—	(566)	(566)
Liabilities at December 31, 2022	\$ —	\$ 5,895	\$ 5,895

To estimate the liabilities related to the EPP contracts an option pricing method was implemented through a Monte Carlo simulation. The unobservable inputs were simulated based on the available values for avoided cost and cost of electricity as calculated for December 31, 2022 and 2021, using an expected growth rate of 7% and 7% over the contracts' life and volatility of 15% and 20%, respectively. The estimated growth rate and volatility were estimated based on the historical tariff changes for the period 2008 to 2022. Avoided cost is the transmission and distribution cost expressed in dollars per kilowatt hours avoided in the given year of the contract, calculated using the billing rates of the effective utility tariff applied during the year to the host account for which usage is offset by the generator. If the billing rates within the utility tariff change during the measurement period, the average of the amount of charge for each rate shall be weighted by the number of effective months for each amount.

The inputs listed above would have had a direct impact on the fair values of the above derivatives if they were adjusted. Generally, an increase in natural gas prices and a decrease in electric grid prices would each result in an increase in the estimated fair value of our derivative liabilities.

Financial Assets and Liabilities and Other Items Not Measured at Fair Value on a Recurring Basis

Customer Receivables and Debt Instruments - The fair value for customer financing receivables is based on a discounted cash flow model, whereby the fair value approximates the present value of the receivables (Level 3). The senior secured notes, term loans and convertible notes are based on rates currently offered for instruments with similar maturities and terms (Level 3). The following table presents the estimated fair values and carrying values of customer receivables and debt instruments (in thousands):

	December 31, 2022		December 31, 2021	
	Net Carrying Value	Fair Value	Net Carrying Value	Fair Value
Customer receivables				
Customer financing receivables	\$ —	\$ —	\$ 45,269	\$ 38,334
Debt instruments				
Recourse:				
10.25% Senior Secured Notes due March 2027	60,960	60,472	68,968	72,573
2.5% Green Convertible Senior Notes due August 2025	224,832	309,488	222,863	356,822
Non-recourse:				
7.5% Term Loan due September 2028	—	—	29,006	35,669
6.07% Senior Secured Notes due March 2030	—	—	73,262	83,251
3.04% Senior Secured Notes due June 2031	125,787	117,028	132,631	137,983

6. Balance Sheet Components

Inventories

The components of inventory consist of the following (in thousands):

	December 31,	
	2022	2021
Raw materials	\$ 165,446	\$ 80,809
Work-in-progress	44,660	31,893
Finished goods	58,288	30,668
	<u>\$ 268,394</u>	<u>\$ 143,370</u>

The inventory reserves were \$17.2 million and \$13.9 million as of December 31, 2022 and 2021, respectively.

Prepaid Expenses and Other Current Assets

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

	December 31,	
	2022	2021
Receivables from employees	\$ 6,553	\$ 5,463
Prepaid workers compensation	5,536	5,330
Prepaid Managed Services	4,405	2,480
Prepaid hardware and software maintenance	4,290	3,494
Tax receivables	3,676	1,518
Deposits made	1,409	817
Prepaid deferred commissions	1,002	724
Other prepaid expenses and other current assets	16,772	10,835
	<u>\$ 43,643</u>	<u>\$ 30,661</u>

Property, Plant and Equipment, Net

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

	December 31,	
	2022	2021
Energy Servers	\$ 538,912	\$ 674,799
Machinery and equipment	145,555	110,600
Leasehold improvements	104,528	52,936
Construction-in-progress	72,174	43,544
Buildings	49,240	48,934
Computers, software and hardware	24,608	21,276
Furniture and fixtures	9,581	8,607
	<u>944,598</u>	<u>960,696</u>
Less: accumulated depreciation	<u>(344,184)</u>	<u>(356,590)</u>
	<u>\$ 600,414</u>	<u>\$ 604,106</u>

Depreciation expense related to property, plant and equipment was \$61.6 million, \$53.4 million and \$52.2 million for the years ended December 31, 2022, 2021 and 2020, respectively.

Property, plant and equipment under operating leases by the PPA Entities was \$226.0 million and \$368.0 million and accumulated depreciation for these assets was \$92.7 million and \$139.4 million as of December 31, 2022 and 2021, respectively. Depreciation expense for these assets was \$12.1 million, \$23.5 million and \$23.8 million for the years ended December 31, 2022, 2021 and 2020, respectively.

PPA IIIa Upgrade

In June 2022, we started a project to replace 9.8 megawatts of second-generation Energy Servers (the “old Energy Servers”) at PPA IIIa Investment Company and Operating Company (“PPA IIIa”) with current generation Energy Servers (the “new Energy Servers”) (the “PPA IIIa Upgrade”, the “PPA IIIa Repowering”). The replacement was substantially complete as of December 31, 2022. See Note 11 - *Portfolio Financings* for additional information.

PPA IV Upgrade

In November 2022, we started a project to replace 19.3 megawatts of second-generation Energy Servers (the “old Energy Servers”) at PPA IV Investment Company and Operating Company (“PPA IV”) with current generation Energy Servers (the “new Energy Servers”) (the “PPA IV Upgrade”, the “PPA IV Repowering”). The replacement was ongoing as of December 31, 2022. See Note 11 - *Portfolio Financings* for additional information.

Change in Estimate

In June 2022 and November 2022, due to the replacement of old Energy Servers as part of the PPA IIIa and PPA IV Repowering, respectively, we revised the expected useful life of the old Energy Servers. As a result, the expected useful life of old Energy Servers decreased from 15 years to approximately 0.5 years. We recognized accelerated depreciation of \$0.5 million in electricity cost of revenue on the revised carrying amount of the old Energy Servers after impairment loss in our consolidated statements of operations. There is no effect from this change in accounting estimate on future periods.

Other Long-Term Assets

Other long-term assets consist of the following (in thousands):

	December 31,	
	2022	2021
Deferred commissions	\$ 8,320	\$ 7,569
Long-term lease receivable	8,076	7,953
Prepaid insurance	4,047	9,534
Deposits made	2,672	1,923
Prepaid Managed Services	2,373	3,010
Deferred tax asset	1,151	955
Investments in subsidiaries	—	1,819
Prepaid and other long-term assets	13,566	8,310
	<u>\$ 40,205</u>	<u>\$ 41,073</u>

Accrued Warranty

Accrued warranty liabilities consist of the following (in thousands):

	December 31,	
	2022	2021
Product performance	\$ 16,901	\$ 10,785
Product warranty	431	961
	<u>\$ 17,332</u>	<u>\$ 11,746</u>

Changes in the product warranty and product performance liabilities were as follows (in thousands):

Balances at December 31, 2020	\$	10,154
Accrued warranty, net		11,049
Warranty expenditures during the year		(9,457)
Balances at December 31, 2021	\$	11,746
Accrued warranty, net		17,719
Warranty expenditures during the year		(12,133)
Balances at December 31, 2022	\$	17,332

Accrued Expenses and Other Current Liabilities

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

	December 31,	
	2022	2021
Compensation and benefits	\$ 48,156	\$ 38,222
General invoice and purchase order accruals	44,010	23,706
Delaware grant	9,495	—
Accrued installation	7,905	13,968
Sales-related liabilities	7,147	6,040
Sales tax liabilities	6,172	1,491
PPA IV Upgrade financing obligations	6,076	—
Accrued legal expenses	4,403	1,765
Interest payable	3,128	2,159
Current portion of derivative liabilities	2,596	6,059
Accrued consulting expenses	1,390	1,731
Provision for income tax	1,140	479
Finance lease liability	1,024	863
Option to acquire a variable number of shares of Class A Common Stock	—	13,200
Other	1,541	4,455
	<u>\$ 144,183</u>	<u>\$ 114,138</u>

Preferred Stock

As of December 31, 2022 and December 31, 2021, we had 20,000,000 shares and 10,000,000 shares of preferred stock authorized, respectively, of which 10,000,000 shares were designated as Series A redeemable convertible preferred stock. The preferred stock had \$0.0001 par value. There were no shares of preferred stock issued or outstanding as of December 31, 2022 and, other than the Series A redeemable convertible preferred stock, as of December 31, 2021.

7. Outstanding Loans and Security Agreements

The following is a summary of our debt as of December 31, 2022 (in thousands, except percentage data):

	Unpaid Principal Balance	Net Carrying Value			Interest Rate	Maturity Dates	Entity	Recourse
		Current	Long-Term	Total				
10.25% Senior Secured Notes due March 2027	\$ 61,653	\$ 12,716	\$ 48,244	\$ 60,960	10.25%	March 2027	Company	Yes
2.5% Green Convertible Senior Notes due August 2025	230,000	—	224,832	224,832	2.5%	August 2025	Company	Yes
Total recourse debt	291,653	12,716	273,076	285,792				
3.04% Senior Secured Notes due June 30, 2031	127,430	13,307	112,480	125,787	3.04%	June 2031	PPA V	No
Total non-recourse debt	127,430	13,307	112,480	125,787				
Total debt	\$ 419,083	\$ 26,023	\$ 385,556	\$ 411,579				

The following is a summary of our debt as of December 31, 2021 (in thousands, except percentage data):

	Unpaid Principal Balance	Net Carrying Value			Interest Rate	Maturity Dates	Entity	Recourse
		Current	Long-Term	Total				
10.25% Senior Secured Notes due March 2027	\$ 70,000	\$ 8,348	\$ 60,620	\$ 68,968	10.25%	March 2027	Company	Yes
2.5% Green Convertible Senior Notes due August 2025	230,000	—	222,863	222,863	2.5%	August 2025	Company	Yes
Total recourse debt	300,000	8,348	283,483	291,831				
3.04% Senior Secured Notes due June 30, 2031	134,644	9,376	123,255	132,631	3.04%	June 2031	PPA V	No
7.5% Term Loan due September 2028	31,070	3,436	25,570	29,006	7.5%	September 2028	PPA IIIa	No
6.07% Senior Secured Notes due March 2030	73,955	4,671	68,591	73,262	6.07%	March 2030	PPA IV	No
Total non-recourse debt	239,669	17,483	217,416	234,899				
Total debt	\$ 539,669	\$ 25,831	\$ 500,899	\$ 526,730				

Recourse debt refers to debt that we have an obligation to pay. Non-recourse debt refers to debt that is recourse to only our subsidiaries. The differences between the unpaid principal balances and the net carrying values apply to deferred financing costs. We and all of our subsidiaries were in compliance with all financial covenants as of December 31, 2022 and December 31, 2021.

Recourse Debt Facilities

10.25% Senior Secured Notes due March 2027 - On May 1, 2020, we issued \$70.0 million of 10.25% Senior Secured Notes in a private placement (the “10.25% Senior Secured Notes”). The 10.25% Senior Secured Notes are governed by an indenture (the “Senior Secured Notes Indenture”) entered into among us, the guarantor party thereto and U.S. Bank National Association, in its capacity as trustee and collateral agent. The 10.25% Senior Secured Notes are secured by certain of our operations and maintenance agreements that previously were part of the security for the 6% Convertible Notes. The 10.25% Senior Secured Notes are supported by a \$150.0 million indenture between us and U.S. Bank National Association, which contained an accordion feature for an additional \$80.0 million of notes that could have been issued on or prior to September 27, 2021. We chose not to exercise this accordion feature, which has already expired.

Interest on the 10.25% Senior Secured Notes is payable quarterly, commencing June 30, 2020. The 10.25% Senior Secured Notes Indenture contains customary events of default and covenants relating to, among other things, the incurrence of new debt, affiliate transactions, liens and restricted payments. Commencing on March 27, 2022, we may redeem all of the 10.25% Senior Secured Notes at a price equal to 108% of the principal amount of the 10.25% Senior Secured Notes plus

accrued and unpaid interest, with such optional redemption prices decreasing to 104% on and after March 27, 2023, 102% on and after March 27, 2024 and 100% on and after March 27, 2026. If we experience a change of control, we must offer to purchase for cash all or any part of each holder's 10.25% Senior Secured Notes at a purchase price equal to 101% of the principal amount of the 10.25% Senior Secured Notes, plus accrued and unpaid interest. The non-current balance of the outstanding unpaid principal of the 10.25% Senior Secured Notes was \$48.9 million and \$61.7 million as of December 31, 2022 and 2021, respectively. The current balance of the outstanding unpaid principal of the 10.25% Senior Secured Notes was \$12.7 million and \$8.3 million as of December 31, 2022 and 2021, respectively.

2.5% Green Convertible Senior Notes due August 2025 - In August 2020, we issued \$230.0 million aggregate principal amount of our 2.5% Green Convertible Senior Notes due August 2025 (the "Green Notes"), unless earlier repurchased, redeemed or converted. The principal amount of the Green Notes is \$230.0 million, less initial purchaser's discount of \$6.9 million and other issuance costs of \$3.0 million resulting in net proceeds of \$220.1 million.

The Green Notes are senior, unsecured obligations accruing interest at a rate of 2.5% per annum, payable semi-annually in arrears on February 15 and August 15 of each year, beginning on February 15, 2021.

We may not redeem the Green Notes prior to August 21, 2023. We may elect to redeem, at face value, all or any portion of the Green Notes at any time on or after August 21, 2023 and on or before the twenty-sixth trading day immediately before the maturity date, provided certain conditions are met.

Before May 15, 2025, the noteholders have the right to convert their Green Notes only upon the occurrence of certain events, including a conversion upon satisfaction of a condition relating to the closing price of our common stock (the "Closing Price Condition"). If the Closing Price Condition is met on at least 20 of the last 30 consecutive trading days in any quarter, the noteholders may convert their Green Notes at any time during the immediately following quarter. The Closing Price Condition was met during the three months ended September 30, 2022 and accordingly, the noteholders could convert their Green Notes at any time during the quarter ended December 31, 2022, but they did not elect to do so. From and after May 15, 2025, the noteholders may convert their Green Notes at any time at their election until the close of business on the second trading day immediately before the maturity date. Should the noteholders elect to convert their Green Notes, we may elect to settle the conversion by paying or delivering, as applicable, cash, shares of our Class A common stock or a combination thereof.

The initial conversion rate is 61.6808 shares of Class A common stock per \$1,000 principal amount of notes, which represents an initial conversion price of approximately \$16.21 per share of Class A common stock. The conversion rate and conversion price are subject to customary adjustments upon the occurrence of certain events. In addition, if certain corporate events that constitute a "Make-Whole Fundamental Change" as defined occur, the conversion rate will, in certain circumstances, be increased for a specified period of time.

We adopted ASU 2020-06 as of January 1, 2021 using the modified retrospective transition method. Upon adoption, we combined the previously separated equity component of the Green Notes with the liability component, which is now together classified as debt, thereby eliminating the subsequent amortization of the debt discount as interest expense. Similarly, the portion of issuance costs previously allocated to equity was reclassified to debt and amortized as interest expense. Accordingly, we recorded a net decrease to accumulated deficit of \$5.3 million, a decrease to additional paid-in capital of \$126.8 million, and an increase to recourse debt, non-current, of approximately \$121.5 million upon adoption as of January 1, 2021.

Interest on the Green Notes for the years ended December 31, 2022, 2021 and 2020 was \$7.7 million, \$7.7 million and \$2.9 million, respectively, including amortization of issuance costs of \$2.0 million, \$2.0 million and \$0.8 million, respectively.

Non-recourse Debt Facilities

3.04% Senior Secured Notes due June 2031 - In November 2021, PPA V issued senior secured notes in an aggregate principal amount of \$136.0 million due June 2031. The note bears a fixed rate of 3.04% per annum payable quarterly. The proceeds from the 3.04% Senior Secured Notes due June 2031 were utilized to (i) repay all obligations of the existing LIBOR + 2.5% Term Loan due December 2021, including an outstanding principal balance of \$109.1 million, accrued interest of \$0.1 million, and fees required to terminate associated interest rate swaps of \$11.5 million, (ii) pay the required premium for the PPA V production insurance of \$6.5 million, (iii) and pay related fees and expenses related to the refinancing totaling \$2.1 million, resulting in a net cash flow of \$6.7 million. The note purchase agreement requires us to maintain a debt service reserve, the balance of which was \$8.0 million and \$8.0 million as of December 31, 2022 and 2021, respectively, which was included as part of long-term restricted cash in the consolidated balance sheets. The loan is secured by all assets of PPA V.

7.5% Term Loan due September 2028 - On June 14, 2022, as part of the PPA IIIa Upgrade, we paid off the outstanding balance and related accrued interest of \$30.2 million and \$0.4 million, respectively, and recognized a loss on extinguishment of debt of \$4.2 million. The debt service reserve of \$3.6 million was reclassified from restricted cash to cash and cash equivalents at the time of extinguishment of debt.

6.07% Senior Secured Notes due March 2030 - On November 22, 2022, as part of the PPA IV Upgrade, we paid off the outstanding balance and related accrued interest of \$70.5 million and \$0.4 million, respectively, and recognized a loss on extinguishment of debt of \$4.7 million. The debt service reserve of \$9.1 million was reclassified from restricted cash to cash and cash equivalents at the time of extinguishment of debt.

Repayment Schedule and Interest Expense

The following table presents details of our outstanding loan principal repayment schedule as of December 31, 2022 (in thousands):

2023	\$	26,023
2024		25,428
2025		258,061
2026		30,641
2027		17,772
Thereafter		61,158
	\$	<u>419,083</u>

Interest expense of \$53.5 million, \$69.0 million and \$78.8 million for the years ended December 31, 2022, 2021 and 2020, respectively, was recorded in interest expense on the consolidated statements of operations. This interest expense includes interest expense - related parties of \$2.5 million for the year ended December 31, 2020. We did not incur any interest expense - related parties during the years ended December 31, 2022 and 2021.

8. Derivative Financial Instruments

Option to Acquire a Variable Number of Shares of Class A Common Stock

In December 2021, we provided SK ecoplant with an option to acquire a variable number of shares of Class A common stock (the “Option”). We concluded that the Option is a freestanding financial instrument that should be separately recorded at fair value on the date the SPA was executed. We determined the fair value of the Option on that date to be \$9.6 million. We revalued the Option to its fair value of \$13.2 million as of December 31, 2021.

On August 10, 2022, pursuant to the SPA, SK ecoplant notified us of its intent to exercise its option to purchase additional shares of our Class A common stock, pursuant to a Second Tranche Exercise Notice (as defined in the SPA), and it elected to purchase 13,491,701 shares at a purchase price of \$23.05 per share. Please refer to Note 17 - *SK ecoplant Strategic Investment* for more detail of this transaction.

Cash Flow Hedges

As of December 31, 2021, we had settled our interest rate swaps, which had been designated as cash flow hedges. There were no cash flow hedges as of December 31, 2022. The changes in fair value of the interest rate swaps designated as cash flow hedges and the amounts recognized in accumulated other comprehensive loss and in earnings were as follows during the year ended December 31, 2021 (in thousands):

	Year Ended December 31, 2021
Beginning balance	\$ 15,989
Gain recognized in other comprehensive loss	(2,714)
Amounts reclassified from other comprehensive loss to earnings	(12,529)
Net gain recognized in other comprehensive loss	(15,243)
Gain recognized in earnings	(746)
Ending balance	\$ —

Embedded EPP Derivatives in Sales Contracts

We estimate the fair value of the embedded EPP derivatives in certain of the contracts with our customers using a Monte Carlo simulation model, which considers various potential electricity price forward curves over the sales contracts’ terms. We use historical grid prices and available forecasts of future electricity prices to estimate future electricity prices. The grid pricing EPP guarantees that we provided in some of our sales arrangements represent an embedded derivative, with the initial value accounted for as a reduction in product revenue and any changes, reevaluated quarterly, in the fair market value of the derivative recorded in gain (loss) on revaluation of embedded derivatives.

For the years ended December 31, 2022, 2021 and 2020 we recorded the fair value of the embedded EPP derivatives with no material unrealized gains or losses recorded in either of the three years ended December 31, 2022, 2021 and 2020 in our consolidated statements of operations. The fair value of these derivatives was \$5.9 million and \$6.5 million as of December 31, 2022 and 2021, respectively

9. Leases

Facilities, Energy Servers, and Vehicles

We lease most of our facilities, Energy Servers, and vehicles under operating and finance leases that expire at various dates through February 2036. We lease various manufacturing facilities in California and Delaware. Our Sunnyvale, California manufacturing facility lease was entered into in April 2005 and expires in December 2023. In June 2020, March 2021 and June 2022, we signed leases in Fremont, California that will expire in 2027, 2036 and 2028, respectively, to replace our manufacturing facilities in Sunnyvale and Mountain View, California. These existing plants in California together comprise approximately 421,000 square feet of space. In 2021, we extended the lease term for our headquarters in San Jose, California to 2031 and leased three additional floors. We lease additional office space as field offices in the United States and around the world including in China, India, Japan, the Republic of Korea and Taiwan.

Some of these arrangements have free rent periods or escalating rent payment provisions. We recognize lease cost under such arrangements on a straight-line basis over the life of the leases. For the years ended December 31, 2022, 2021 and 2020, rent expense for all occupied facilities was \$21.4 million, \$16.0 million and \$9.9 million, respectively.

At inception of the contract, we assess whether a contract is a lease based on whether the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration. Lease classification, measurement, and recognition are determined at lease commencement, which is the date the underlying asset is available for use by us. The accounting classification of a lease is based on whether the arrangement is effectively a financed purchase of the underlying asset (financing lease) or not (operating lease). Our operating leases are comprised primarily of leases for facilities, office buildings, and vehicles, and our financing leases are comprised primarily of vehicles.

Our leases have lease terms ranging from less than 1 year to 15 years, some of which include options to extend the leases. The lease term is the non-cancelable period of the lease and includes options to extend the lease when it is reasonably certain that an option will be exercised.

Lease liabilities are measured at the lease commencement date as the present value of future lease payments. Lease right-of-use assets are measured as the lease liability plus unamortized initial direct costs and prepaid (accrued) lease payments less unamortized balance lease incentives received. In measuring the present value of the future lease payments, the discount rate for the lease is the rate implicit in the lease unless that rate cannot be readily determined. In that case, the lessee is required to use its incremental borrowing rate. In computing our lease liabilities, we use the incremental borrowing rate based on the information available on the commencement date using an estimate of company-specific rate in the United States on a collateralized basis and consistent with the lease term for each lease. The lease term is the non-cancelable period of the lease and includes options to extend or terminate the lease when it is reasonably certain that an option will be exercised.

Operating and financing lease right-of-use assets and lease liabilities for facilities, Energy Servers, and vehicles as of December 31, 2022 and 2021 were as follows (in thousands):

	Years Ended December 31,	
	2022	2021
Operating Leases:		
Operating lease right-of-use assets, net ^{1, 2}	\$ 126,955	\$ 106,660
Current operating lease liabilities	(16,227)	(13,101)
Non-current operating lease liabilities	(132,363)	(106,187)
Total operating lease liabilities	<u>\$ (148,590)</u>	<u>\$ (119,288)</u>
Finance Leases:		
Finance lease right-of-use assets, net ^{2, 3, 4}	\$ 2,824	\$ 2,944
Current finance lease liabilities ⁵	(1,024)	(863)
Non-current finance lease liabilities ⁶	(1,971)	(2,157)
Total finance lease liabilities	<u>(2,995)</u>	<u>(3,020)</u>
Total lease liabilities	<u><u>\$ (151,585)</u></u>	<u><u>\$ (122,308)</u></u>

¹ These assets primarily include leases for facilities, Energy Servers, and vehicles.

² Net of accumulated amortization.

³ These assets primarily include leases for vehicles.

⁴ Included in property, plant and equipment, net in the consolidated balance sheets.

⁵ Included in accrued expenses and other current liabilities in the consolidated balance sheets.

⁶ Included in other long-term liabilities in the consolidated balance sheets.

The components of our facilities, Energy Servers, and vehicles' lease costs for the years ended December 31, 2022, 2021, and 2020 were as follows (in thousands):

	Years Ended December 31,		
	2022	2021	2020
Operating lease costs	\$ 25,503	\$ 15,850	\$ 9,804
Financing lease costs:			
Amortization of right-of-use assets	968	1,345	51
Interest on lease liabilities	220	349	16
Total financing lease costs	<u>1,188</u>	<u>1,694</u>	<u>67</u>
Short-term lease costs	974	407	613
Total lease costs	<u><u>\$ 27,665</u></u>	<u><u>\$ 17,951</u></u>	<u><u>\$ 10,484</u></u>

Weighted average remaining lease terms and discount rates for our facilities, Energy Servers and vehicles as of December 31, 2022 and 2021 were as follows:

	December 31,	
	2022	2021
Weighted average remaining lease term:		
Operating leases	8.6 years	8.9 years
Finance leases	3.3 years	3.5 years
Weighted average discount rate:		
Operating leases	10.3 %	9.6 %
Finance leases	6.9 %	7.6 %

Future lease payments under lease agreements for our facilities, Energy Servers and vehicles as of December 31, 2022 were as follows (in thousands):

	Operating Leases	Finance Leases
2023	\$ 30,058	\$ 1,250
2024	26,145	1,076
2025	26,879	590
2026	26,743	371
2027	25,442	180
Thereafter	95,980	11
Total minimum lease payments	231,247	3,478
Less: amounts representing interest or imputed interest	(82,657)	(483)
Present value of lease liabilities	\$ 148,590	\$ 2,995

Managed Services and Portfolio Financings Through PPA Entities

Certain of our customers enter into Managed Services or Portfolio Financings through a PPA Entity to finance their lease of Bloom Energy Servers. Prior to our adoption of ASC 842 as of January 1, 2020, such arrangements with customers that qualified as leases were classified as either sales-type leases or operating leases. For all pre-existing Managed Services Financings or Portfolio Financings through PPA Entities, we have carried over the accounting classifications for those transactions and continue to account for such transactions as either sales-type leases or operating leases under ASC 842. Customer arrangements under Managed Services and Portfolio Financings through PPA Entities entered into after January 1, 2020 do not contain a lease under ASC 842 and are accounted for under ASC 606 as revenue arrangements.

Lease agreements under our Managed Services Financings and Portfolio Financings through PPA Entities include non-cancellable lease terms, during which terms the majority of our investment in Energy Servers under lease are typically recovered. We mitigate remaining residual value risk of its Energy Servers through its provision of maintenance on the Energy Servers during the lease term and through insurance whose proceeds are payable in the event of theft, loss, damage, or destruction.

Managed Services - Our Managed Services Financings with financiers that result in failed sale-and-leaseback transactions are accounted for as financing transactions. Payments received from the financier are recognized as financing obligations in our consolidated balance sheets. Proceeds from the financiers in excess of fair value of Energy Servers under successful sale-and-leaseback transactions are also accounted for as financing obligations. These financing obligations are included in each agreement's contract value and are recognized as short-term or long-term liabilities based on the estimated payment dates. The lease agreements expire on various dates through 2034. For successful sale-and-leaseback transactions, we record right-of-use assets and lease liabilities and record lease expense over the lease term. The recognized lease expense for the year ended December 31, 2022 was \$5.6 million. The recognized lease expense for the years ended December 31, 2021 and 2020 have been immaterial.

We recognized \$20.4 million and \$35.1 million of product revenue, \$11.3 million and \$20.9 million of installation revenue, \$3.3 million and \$10.0 million of financing obligations, and \$12.6 million and \$29.4 million of right-of-use assets and lease liabilities from such successful sale and leaseback transactions for the years ended December 31, 2022 and 2021, respectively.

At December 31, 2022, future lease payments under the Managed Services Agreements financing obligations were as follows (in thousands):

	Financing Obligations
2023	\$ 44,740
2024	42,742
2025	41,726
2026	37,138
2027	20,793
Thereafter	36,223
Total minimum lease payments	223,362
Less: imputed interest	(122,580)
Present value of net minimum lease payments	100,782
Less: current financing obligations	(17,364)
Long-term financing obligations	\$ 83,418

The long-term financing obligations, as reflected in our consolidated balance sheets, were \$442.1 million and \$461.9 million as of December 31, 2022 and 2021, respectively. The difference between these obligations and the principal obligations in the table above will be offset against the carrying value of the related Energy Servers at the end of the lease and the remainder recognized as a gain at that point.

Portfolio Financings through PPA Entities - Customer arrangements entered into prior to January 1, 2020 under Portfolio Financing arrangements through a PPA Entity that qualified as leases are accounted for as either sales-type leases or operating leases. Since January 1, 2020, we have not entered into any new PPAs with customers under such arrangements.

The components of our aggregate net investment in sales-type leases under our Portfolio Financings through PPA entities consisted of the following (in thousands):

	December 31, 2021
Lease payment receivables, net ¹	\$ 44,378
Estimated residual value of leased assets (unguaranteed)	890
Net investment in sales-type leases	45,268
Less: current portion	(5,784)
Non-current portion of net investment in sales-type leases	<u>\$ 39,484</u>

¹ Net of current estimated credit losses of approximately \$0.1 million as of December 31, 2021.

As of December 31, 2022, there was no net investment in sales-type leases as a result of PPA IIIa Repowering. Please refer to Note 11 - *Portfolio Financings* for details.

Future estimated operating lease payments we expect to receive from Portfolio Financing arrangements through PPA Entities as of December 31, 2022, were as follows (in thousands):

	Operating Leases
2023	21,063
2024	21,238
2025	21,630
2026	22,092
2027	22,566
Thereafter	85,009
Total minimum lease payments	<u>\$ 193,598</u>

10. Stock-Based Compensation and Employee Benefit Plans

Share-based grants are designed to reward employees for their long-term contributions to us and provide incentives for them to remain with us.

2012 Equity Incentive Plan

Our 2012 Equity Incentive Plan (the “2012 Plan”) was approved in August 2012. The 2012 Plan provided for the grant of incentive stock options, non-statutory stock options, stock appreciation rights and RSUs, all of which may be granted to employees, including officers, and to non-employee directors and consultants except we may grant incentive stock options only to employees.

Grants under the 2012 Plan generally vest ratably over a four year period from the vesting commencement date and expire ten years from grant date. Original grants under the 2012 Plan were for “common stock”. Pursuant to the Twelfth Amended and Restated Articles of Incorporation authorized in July 2018, all such shares automatically converted to Class B shares of common stock. As of December 31, 2022, stock options to purchase 5,436,417 shares of Class B common stock were outstanding with a weighted average exercise price of \$27.15 per share, and no shares were available for future grant. The 2012 Equity Incentive Plan has been canceled but continues to govern outstanding option grants under the 2012 Plan.

2018 Equity Incentive Plan

The 2018 Equity Incentive Plan (the “2018 Plan”) was approved in April 2018. The 2018 Plan became effective upon the IPO and serves as the successor to the 2012 Plan. The 2018 Plan authorizes the award of stock options, restricted stock awards, stock appreciation rights, RSUs, PSUs and stock bonuses. The 2018 Plan provides for the grant of awards to employees, directors, consultants, independent contractors and advisors provided the consultants, independent contractors, directors and advisors render services not in connection with the offer and sale of securities in a capital-raising transaction. The exercise price of stock options is at least equal to the fair market value of Class A common stock on the date of grant. Grants under the 2018 Plan generally vest ratably over three or four years from the vesting commencement date and expire ten years from grant date.

The 2018 Plan allows for an annual increase on January 1, of each of 2019 through 2028, by the lesser of (a) four percent (4%) of the number of Class A common stock, Class B common stock, and common stock equivalents (including options, RSUs, warrants and preferred stock on an as-converted basis) issued and outstanding on each December 31 immediately prior to the date of increase, and (b) such number of shares determined by the Board of Directors.

As of December 31, 2022, stock options to purchase 3,311,892 shares of Class A common stock were outstanding, with a weighted average exercise price of \$10.11 per share, and 9,543,386 RSUs that may be settled for Class A common stock, which were granted pursuant to the 2018 Plan, were outstanding. As of December 31, 2022, we had 28,340,641 shares reserved for issuance under the 2018 Plan.

2002 Stock Plan

Our 2002 Stock Plan (the “2002 Plan”) was approved in April 2002 and amended in June 2011. In August 2012 and in connection with the adoption of the 2012 Plan, shares authorized for issuance under the 2002 Plan were cancelled, except for those shares reserved for issuance upon exercise of outstanding stock options. Any outstanding stock options granted under the 2002 Plan remain outstanding, subject to the terms of the 2002 Plan, until such shares are issued under those awards (by exercise of stock options) or until the awards terminate or expire by terms.

Grants under the 2002 Plan generally vest ratably over a four years period from the vesting commencement date and expire ten years from grant date. Original grants under the 2002 Plan were for “common stock”. Pursuant to the Twelfth Amended and Restated Articles of Incorporation authorized in July 2018, all such shares automatically converted to Class B shares of common stock. As of December 31, 2022, there were no outstanding options to purchase shares of Class B common stock. The 2002 Stock Plan has been canceled but continues to govern outstanding option grants under the 2012 Plan.

Stock-Based Compensation Expense

We used the following weighted-average assumptions in applying the Black-Scholes valuation model for determination of option valuation for options granted for the year ended December 31, 2020:

	Year Ended December 31, 2020
Risk-free interest rate	0.6%
Expected term (years)	6.6
Expected dividend yield	—
Expected volatility	71.0%

There were no options granted for the years ended December 31, 2022 and 2021.

The following table summarizes the components of stock-based compensation expense in the consolidated statements of operations (in thousands):

	Years Ended December 31,		
	2022	2021	2020
Cost of revenue	\$ 18,955	\$ 13,811	\$ 17,475
Research and development	33,956	20,274	19,037
Sales and marketing	18,651	17,085	10,997
General and administrative	42,404	24,962	26,384
	<u>\$ 113,966</u>	<u>\$ 76,132</u>	<u>\$ 73,893</u>

As of December 31, 2022, and 2021, we capitalized \$6.3 million and \$5.8 million of stock-based compensation cost, respectively, into inventory, property, plant and equipment and deferred cost of goods sold.

Stock Option and Stock Award Activity

The following table summarizes the stock option activity under our stock plans during the reporting period:

	Outstanding Options			
	Number of Shares	Weighted Average Exercise Price	Remaining Contractual Life (Years)	Aggregate Intrinsic Value (in thousands)
Balances at December 31, 2020	15,354,271	\$ 21.27		
Exercised	(3,460,364)	23.05		
Forfeited	(1,156,612)	16.33		
Balances at December 31, 2021	10,737,295	21.23	5.2	\$ 60,304
Exercised	(537,324)	7.08		
Forfeited	(42,774)	6.98		
Expired	(1,408,888)	30.39		
Balances at December 31, 2022	<u>8,748,309</u>	20.70	4.6	40,532
Vested and expected to vest at December 31, 2022	<u>8,743,013</u>	20.71	4.6	40,469
Exercisable at December 31, 2022	8,636,644	20.86	4.6	39,296

Stock Options - During the years ended December 31, 2022, 2021 and 2020, we recognized \$7.1 million, \$15.6 million and \$19.1 million of stock-based compensation costs for stock options, respectively.

We did not grant options in the years ended December 31, 2022 and 2021.

During the years ended December 31, 2022, 2021 and 2020, the intrinsic value of stock options exercised was \$3.8 million, \$28.9 million and \$11.2 million, respectively.

As of December 31, 2022 and 2021, we had unrecognized compensation costs related to unvested stock options of \$0.4 million and \$6.2 million, respectively. This cost is expected to be recognized over the remaining weighted-average period of 0.9 years and 0.9 years, respectively. Cash received from stock options exercised totaled \$3.7 million, \$79.7 million and \$15.0 million for the years ended December 31, 2022, 2021 and 2020, respectively.

A summary of our stock awards activity and related information is as follows:

	Number of Awards Outstanding	Weighted Average Grant Date Fair Value
Unvested Balance at December 31, 2020	6,418,788	\$ 13.71
Granted	6,475,536	25.82
Vested	(2,904,996)	17.04
Forfeited	(1,621,664)	20.97
Unvested Balance at December 31, 2021	8,367,664	\$ 20.52
Granted	5,395,199	19.74
Vested	(2,957,215)	18.14
Forfeited	(1,256,613)	21.32
Unvested Balance at December 31, 2022	9,549,035	\$ 19.99

Stock Awards - The estimated fair value of RSUs and PSUs is based on the fair value of our Class A common stock on the date of grant. For the years ended December 31, 2022, 2021 and 2020, we recognized \$89.4 million, \$50.1 million and \$44.1 million of stock-based compensation costs for stock awards, respectively.

As of December 31, 2022 and 2021, we had \$135.7 million and \$114.9 million of unrecognized stock-based compensation cost related to unvested stock awards, expected to be recognized over a weighted average period of 1.9 years and 2.3 years, respectively.

Executive Awards

In 2020, the Company granted RSU, PSU and stock option awards (the “2020 Executive Awards”) to certain executive staff pursuant to the 2018 Plan. The RSUs and stock options have time-based vesting schedules. The PSUs consist of three vesting tranches with an annual vesting schedule based on the attainment of performance conditions during fiscal year 2020 and assuming continued employment and service through each vesting date. Stock-based compensation costs associated with the 2020 Executive Awards are recognized over the service period as we evaluate the probability of the achievement of the performance conditions.

In 2021, the Company granted RSU and PSU awards (the “2021 Executive Awards”) to certain executive staff, other than our Chief Executive Officer, pursuant to the 2018 Plan. The RSUs have time-based vesting schedules. The PSUs consist of annual vesting tranches based on the attainment of performance conditions and assuming continued employment and service through each vesting date. Stock-based compensation costs associated with the 2021 Executive Awards are recognized over the service period as we evaluate the probability of the achievement of the performance conditions.

In 2021, the Company also granted RSU and PSU awards to our Chief Executive Officer pursuant to the 2018 Plan. The RSUs will vest in equal annual installments over five years from the grant date. A portion of the PSUs can be earned based on achieving certain financial performance goals and another portion can be earned based upon achieving certain progressive stock price hurdles. Any shares issued under the PSU awards will be subject to a two-year post-vest holding period in which the award holder will be restricted from selling any shares (net of shares settled for taxes). As of December 31, 2022, the unamortized compensation expense for the RSUs and PSUs was \$22.4 million. Actual compensation expense is dependent on the performance of the PSUs that vest based upon a performance condition. We estimated the fair value of the PSUs that vest based on a market condition on the date of grant using a Monte Carlo simulation with the following assumptions: (i) expected volatility of 71.2%, (ii) risk-free interest rate of 1.6%, and (iii) no expected dividend yield.

In 2022, the Company granted RSU and PSU awards (the “2022 Executive Awards”) to certain executive staff, including our Chief Executive Officer, pursuant to the 2018 Plan. The RSUs have time-based vesting schedules. The PSUs consist of three vesting tranches with an annual vesting schedule based on the attainment of performance conditions during fiscal year 2022 and assuming continued employment and service through each vesting date. Stock-based compensation costs associated with the 2022 Executive Awards are recognized over the service period as we evaluate the probability of the achievement of the performance conditions.

The following table presents the stock activity and the total number of shares available for grant under our stock plans:

	Plan Shares Available for Grant
Balances at December 31, 2020	20,233,754
Added to plan	8,102,014
Granted	(6,475,536)
Cancelled/Forfeited	2,778,276
Expired	(491,724)
Balances at December 31, 2021	24,146,784
Added to plan	8,384,460
Granted	(5,431,930)
Cancelled/Forfeited	2,597,990
Expired	(1,356,663)
Balances at December 31, 2022	28,340,641

2018 Employee Stock Purchase Plan

In April 2018, we adopted the 2018 ESPP. The 2018 ESPP became effective upon our initial public offering (“IPO”) in July 2018. The 2018 ESPP is intended to qualify under Section 423 of the Internal Revenue Code. The aggregate number of our shares that may be issued over the term of our ESPP is 33,333,333 Class A common stock. A total of 3,333,333 shares of our Class A common stock were initially reserved for issuance under the plan. The number of shares reserved for issuance under the 2018 ESPP will increase automatically on the 1st day of January of each of the first nine years following the first offering date by the number of shares equal to one percent (1%) of the total number of Class A common stock, Class B common stock and common stock equivalents (including options, RSUs, warrants and preferred stock on an as converted basis) issued and outstanding on the immediately preceding December 31 (rounded down to the nearest whole share); provided, that the Board of Directors or the Compensation Committee may in its sole discretion reduce the amount of the increase in any particular year.

The 2018 ESPP allows eligible employees to purchase shares, subject to purchase limits of 2,500 shares during each six month period or \$25,000 worth of stock for each calendar year, of our Class A common stock through payroll deductions at a price per share equal to 85% of the lesser of the fair market value of our Class A common stock (i) on the first trading day of the applicable offering date and (ii) the last trading day of each purchase date.

During the years ended December 31, 2022, 2021 and 2020, we recognized \$16.2 million, \$7.6 million and \$5.7 million of stock-based compensation costs for the 2018 ESPP, respectively. We issued 759,744 and 1,945,305 shares in the years ended December 31, 2022 and 2021, respectively. During the years ended December 31, 2022 and 2021, we added an additional 12,055,792 and 1,902,572 shares and there were 13,840,716 and 2,544,668 shares available for issuance as of December 31, 2022 and 2021, respectively.

As of December 31, 2022 and 2021, we had \$12.0 million and \$9.8 million of unrecognized stock-based compensation costs, expected to be recognized over a weighted average period of 0.6 years and 0.5 years, respectively.

We used the following weighted-average assumptions in applying the Black-Scholes valuation model for determination of the 2018 ESPP share valuation:

	Years Ended December 31,	
	2022	2021
Risk-free interest rate	3.1%-3.2%	0.1% - 2.8%
Expected term (years)	0.5 - 2.0	0.5 - 2.0
Expected dividend yield	—	—
Expected volatility	78.0%-88.9%	95.0% - 114.5%

11. Portfolio Financings

Overview

We have developed various financing options that enable customers' use of the Energy Servers through third-party ownership financing arrangements.

In some cases, similar to direct purchases and leases, the standard one-year warranty and performance guaranties are included in the price of the product. The Operating Company also enters into a master services agreement with us following the first year of service to extend the warranty services and guaranties over the term of the PPA. In other cases, the master services agreements including performance warranties and guaranties are billed on a quarterly basis starting in the first quarter following the placed-in-service date of the Energy Server(s) and continuing over the term of the PPA. The first of such arrangements was considered a sales-type lease and the product revenue from that agreement was recognized upfront in the same manner as direct purchase and lease transactions. Substantially all of our subsequent PPAs have been accounted for as operating leases with the related revenue under those agreements recognized ratably over the PPA term as electricity revenue. We recognize the cost of revenue, primarily product costs and maintenance service costs, over the shorter of the estimated useful life of the Energy Server or the term of the PPA.

We and our third-party equity investors (together, the "Equity Investors") contribute funds into a limited liability investment entity (the "Investment Company") that owns and is parent to the Operating Company (together, the "PPA Entities"). These PPA Entities constitute VIEs under U.S. GAAP. We have considered the provisions within the contractual agreements which grant us power to manage and make decisions affecting the operations of these VIEs. We consider that the rights granted to the Equity Investors under the contractual agreements are more protective in nature rather than participating. Therefore, we have determined under the power and benefits criterion of ASC 810, *Consolidations* that we are the primary beneficiary of these VIEs. As the primary beneficiary of these VIEs, we consolidate in our consolidated financial statements the financial position, results of operations and cash flows of the PPA Entities, and all intercompany balances and transactions between us and the PPA Entities are eliminated in the consolidated financial statements.

In accordance with our Portfolio Financings, the Operating Company acquires Energy Servers from us for cash payments that are made on a similar schedule as if the Operating Company were a customer purchasing an Energy Server from us outright. In the consolidated financial statements, the sale of Energy Servers by us to the Operating Company are treated as intercompany transactions and as a result eliminated in consolidation. The acquisition of Energy Servers by the Operating Company is accounted for as a non-cash reclassification from inventory to Energy Servers within property, plant and equipment, net on our consolidated balance sheets. In arrangements qualifying for sales-type leases, we reduce these recorded assets by amounts received from U.S. Treasury Department cash grants and from similar state incentive rebates.

The Operating Company sells the electricity to end customers under PPAs. Cash generated by the electricity sales, as well as receipts from any applicable government incentive program, is used to pay operating expenses (including the management and services we provide to maintain the Energy Servers over the term of the PPA) and to service the non-recourse debt with the remaining cash flows distributed to the Equity Investors. In transactions accounted for as sales-type leases, we recognize subsequent customer billings as electricity revenue over the term of the PPA and amortize any applicable government incentive program grants as a reduction to depreciation expense of the Energy Server over the term of the PPA. In transactions accounted for as operating leases, we recognize subsequent customer payments and any applicable government incentive program grants as electricity revenue and service revenue over the term of the PPA.

Upon sale or liquidation of a PPA Entity, distributions would occur in the order of priority specified in the contractual agreements.

We have established six different PPA Entities to date. The contributed funds are restricted for use by the Operating Company to the purchase of our Energy Servers manufactured by us in our normal course of operations. All six PPA Entities utilized their entire available financing capacity and have completed the purchase of their Energy Servers. Any debt incurred by the Operating Companies is non-recourse to us. Under these structures, each Investment Company is treated as a partnership for U.S. federal income tax purposes. Equity Investors receive investment tax credits and accelerated tax depreciation benefits.

PPA IIIa Repowering of Energy Servers

PPA IIIa was established in 2012 and we, through a special purpose subsidiary (the "Project Company"), had previously entered into certain agreements for the purpose of developing, financing, owning, operating, maintaining and managing a portfolio of 9.8 megawatts of Energy Servers.

On March 31, 2022, we entered into a Membership Interest Purchase Agreement (the “MIPA”) where we bought out the equity interest of the third-party investor, wherein the PPA IIIa became wholly owned by us (the “PPA IIIa Buyout”).

Following the PPA IIIa Buyout and prior to June 14, 2022, we repaid all outstanding debt of the Project Company of \$30.6 million, and recognized loss on extinguishment of debt in an amount of \$4.2 million, which includes the write-off of the debt discount related to warrants of \$1.8 million and a make-whole payment of \$2.4 million associated with the debt extinguishment. Refer to Note 7 - *Outstanding Loans and Security Agreements*, Non-recourse Debt Facilities section.

On June 14, 2022, we sold our 100% interest in the Project Company to the financier through the MIPA. Simultaneously, we entered into an agreement with the Project Company to upgrade the old 9.8 megawatts of Energy Servers (the “old Energy Servers”) by replacing them with a newer generation of Energy Servers (“new Energy Servers”) and providing related installation services, which was financed by the financier (the “EPC Agreement”). The plan is to remove the old Energy Servers prior to installing the new Energy Servers and return the old Energy Servers to Bloom. We also amended and restated our operations and maintenance agreement with the Project Company to cover all new Energy Servers and old Energy Servers prior to their upgrade (“the O&M Agreement”). The operations and maintenance fees under the O&M Agreement are paid on a fixed dollar per kilowatt basis.

Certain power purchase agreements within the PPA IIIa portfolio were classified as sales-type leases under ASC 840 *Leases*, while some were classified as operating leases. The Company elected the practical expedient package with the adoption of ASC 842, which allowed the Company to carry forward the lease classification upon adoption of ASC 842 on January 1, 2020. The leases were modified prior to the sale of the PPA IIIa to the financier. Such modified leases were reassessed and determined to not be leases under ASC 842 because customers have no control over the identified assets. Accordingly, on the date of modification, the customer financing receivables were derecognized and recognized as property, plant, and equipment (“PPA IIIa PP&E”).

Due to our repurchase option on the old Energy Servers, the Company concluded there was no transfer of control of the old Energy Servers upon sale of the membership interest to the financier. Accordingly, the Company continued to recognize the old Energy Servers, despite the legal ownership of such assets under the MIPA. Upon reclassification of the lease assets to PP&E, the Company assessed the recorded assets for impairment. The carrying amount of the PPA IIIa PP&E was determined to be not recoverable as the net undiscounted cash flows are less than the carrying amounts for PPA IIIa PP&E. Therefore, we recognized the asset impairment charge as electricity cost, consistent with depreciation expense classification for property, plant and equipment under leases.

The PPA IIIa Upgrade was substantially complete as of December 31, 2022 and resulted in the following summarized impacts on our consolidated balance sheet as of December 31, 2022: (i) cash and cash equivalents increased by \$29.3 million mainly due to \$66.3 million cash receipts from the sale of new Energy Servers to the Project Company, offset by \$30.6 million for the repayment of outstanding debt and related accrued interest, (ii) both customer financing receivables, current and non-current, and property plant and equipment, net decreased by \$5.9 million, \$36.9 million and \$2.2 million, respectively, due to the impairment of \$44.8 million and accelerated depreciation of \$0.2 million of the existing old Energy Servers (we revised the expected useful life of the old Energy Servers from 15 years to approximately 0.5 years which resulted in recognized accelerated depreciation of \$0.2 million in electricity cost of revenue (see Note 6 - *Balance Sheet Components*)), (iii) inventories and deferred cost of revenue decreased by \$25.0 million, (iv) deferred revenue and customer deposits increased by \$3.4 million, (v) accounts receivable decreased by \$1.8 million and (vi) other liabilities increased by \$3.8 million.

Impacts on our consolidated statements of operations for the year ended December 31, 2022 are summarized as follows: (i) product, installation and service revenue recognized of \$49.8 million, \$4.6 million, and \$0.7 million, respectively, as a result of the sale of new Energy Servers; (ii) cost of electricity revenue of \$45.0 million, including the write-off of old Energy Servers of \$44.8 million and accelerated depreciation of \$0.2 million prior to the completion of installation; (iii) cost of product and installation revenue of \$21.8 million and \$3.2 million, respectively, due to the sale of new Energy Servers; and (iv) \$4.2 million of loss on extinguishment of debt.

Impacts on our consolidated statements of cash flows for the year ended December 31, 2022 are summarized as follows: net cash provided by financing activities decreased by \$32.6 million due to the repayment of debt of \$30.2 million and cash fee of \$2.4 million associated with debt extinguishment.

PPA IV Repowering of Energy Servers

PPA IV was established in 2014 and we, through a Project Company, had previously entered into certain agreements for the purpose of developing, financing, owning, operating, maintaining and managing a portfolio of 19.3 megawatts of Energy Servers.

On November 2, 2022, we entered into the MIPA where we bought out the equity interest of the third-party investor for \$4.0 million, wherein the PPA IV became wholly owned by us (the “PPA IV Buyout”).

Following the PPA IV Buyout and prior to November 22, 2022, we repaid all outstanding debt of the Project Company of \$70.9 million, and recognized a loss on extinguishment of debt in an amount of \$4.7 million, which includes the write-off of the debt discount of \$0.6 million and a make-whole payment of \$4.1 million associated with the debt extinguishment. Refer to Note 7 - *Outstanding Loans and Security Agreements*, Non-recourse Debt Facilities section.

On November 22, 2022, we sold our 100% interest in the Project Company to the financier through the MIPA. Simultaneously, we entered into an agreement with the Project Company to upgrade the 19.3 megawatts of old Energy Servers by replacing them with new Energy Servers and providing related installation services, which was financed by the financier under the EPC Agreement. The old Energy Servers will be removed prior to installing the new Energy Servers, whereby upon completion of installation the old Energy Servers will be returned to Bloom. We also amended and restated our O&M Agreement with the Project Company to cover all new Energy Servers and old Energy Servers prior to their upgrade. The operations and maintenance fees under the O&M Agreement are paid on a fixed dollar per kilowatt basis.

The power purchase agreements within the PPA IV portfolio were classified as operating leases under ASC 840 *Leases*. The Company elected the practical expedient package with the adoption of ASC 842, which allowed the Company to carry forward the lease classification upon adoption of ASC 842 on January 1, 2020. The leases were modified prior to the sale of the PPA IV to the financier. Such modified leases were reassessed and determined to not be leases under ASC 842 because customers have no control over the identified assets. Accordingly, on the date of modification, the operating leases were recognized as property, plant, and equipment (“PPA IV PP&E”).

Due to our repurchase option on the old Energy Servers, the Company concluded there was no transfer of control of the old Energy Servers upon sale of the membership interest to the financier. Accordingly, the Company continued to recognize the old Energy Servers, despite the legal ownership of such assets under the MIPA. The Company assessed the recorded assets for impairment. The carrying amount of the PPA IV PP&E was determined to be not recoverable as the net undiscounted cash flows are less than the carrying amounts for PPA IV PP&E. Therefore, we recognized the asset impairment charge as electricity cost, consistent with depreciation expense classification for property, plant and equipment under leases.

The PPA IV Upgrade was in progress as of December 31, 2022 and resulted in the following summarized impacts on our consolidated balance sheet as of December 31, 2022: (i) cash and cash equivalents increased by \$16.4 million mainly due to \$91.4 million cash receipts from the sale of new Energy Servers to the Project Company, offset by \$70.9 million for the repayment of outstanding debt and related accrued interest, (ii) property plant and equipment, net decreased by \$64.3 million, due to the impairment of \$64.0 million and accelerated depreciation of \$0.3 million of the existing old Energy Servers (we revised the expected useful life of the old Energy Servers from 15 years to approximately 0.5 years which resulted in recognized accelerated depreciation of \$0.3 million in electricity cost of revenue (see Note 6 - *Balance Sheet Components*)), (iii) contract assets increased by \$17.9 million, (iv) inventories and deferred cost of revenue decreased by \$37.4 million, (v) accrued expenses and other current liabilities increased by \$6.2 million and (vi) prepaid expenses and other current assets decreased by \$4.7 million.

Impacts on our consolidated statements of operations for the year ended December 31, 2022 are summarized as follows: (i) product and electricity revenue recognized of \$102.3 million and \$1.4 million, respectively, as a result of the sale of new Energy Servers; (ii) cost of electricity revenue of \$64.3 million, including the write-off of old Energy Servers of \$64.0 million and accelerated depreciation of \$0.3 million prior to the completion of installation; (iii) cost of product revenue of \$37.4 million, due to the sale of new Energy Servers; (iv) general and administrative expenses of \$4.7 million due to the write-off of prepaid insurance, and; (v) \$4.7 million of loss on extinguishment of debt.

As a result of the equity interest buyout from the third-party investor, noncontrolling interest related to PPA IV of \$23.7 million was eliminated and recorded as part of additional paid-in capital in our Consolidated Statements of Stockholders' Equity (Deficit).

Impacts on our consolidated statements of cash flows for the year ended December 31, 2022 are summarized as follows: net cash provided by financing activities decreased by \$74.6 million due to the repayment of debt of \$70.5 million and cash fee of \$4.1 million associated with debt extinguishment.

PPA V Interest Buyout

On November 2, 2022, we acquired all of Constellation Energy Generation, LLC's ("Constellation") interest in PPA V, as set forth in the Purchase and Sale Agreement. The aggregate purchase price of the transaction amounted to \$8 million. After the acquisition our interest in PPA V increased from 10% to 70%.

The change in our ownership interest in PPA V was accounted for as an equity transaction in accordance with ASC 810 *Consolidation*. The carrying amount of the noncontrolling interest was adjusted to reflect the change in its ownership interest in PPA V, and the difference between the fair value of the consideration paid and the amount by which the noncontrolling interest is adjusted was recognized as additional paid-in capital in our Consolidated Statements of Stockholders' Equity (Deficit).

As of December 31, 2022, we consolidated PPA V in our financial statements as we determined that we still retain controlling financial interest in the PPA V and are its primary beneficiary, and therefore have the power to direct activities which are most significant to this entity.

PPA Entities' Activities Summary

The table below shows the details of the three Investment Company VIEs that were active during the year ended December 31, 2022 and their cumulative activities from inception to the years indicated (dollars in thousands):

	PPA IIIa	PPA IV	PPA V
Overview:			
Maximum size of installation (in megawatts)	10	21	40
Installed size (in megawatts)	10	19	37
Term of power purchase agreements (in years)	15	15	15
First system installed	Feb-13	Sep-14	Jun-15
Last system installed	Jun-14	Mar-16	Dec-16
Initial income (loss) and tax benefits allocation to Equity Investor	99%	90%	99%
Initial cash allocation to Equity Investor	99%	90%	90%
Income (loss), tax and cash allocations to Equity Investor after the flip date	5%	No flip	No flip
Equity Investor(s) ¹	US Bank	Constellation ⁴	Constellation ⁴ and Intel
Put option date ²	1st anniversary of flip point	N/A	N/A
Company cash contributions	\$ 32,223	\$ 11,669	\$ 27,932
Company non-cash contributions ³	8,655	—	—
Equity Investor cash contributions	36,967	84,782	227,344
Debt financing	44,968	99,000	131,237
Activity as of December 31, 2022:			
Distributions to Equity Investor	4,897	15,017	30,786
Debt repayment—principal	44,968	99,000	139,795
Activity as of December 31, 2021:			
Distributions to Equity Investor	4,897	12,848	26,601
Debt repayment—principal	13,899	25,045	132,587
Activity as of December 31, 2020:			
Distributions to Equity Investor	4,847	8,852	24,809
Debt repayment—principal	10,513	21,163	16,475

¹ Investor name represents ultimate parent of subsidiary financing the project. Bloom purchased the equity interest in each of the PPAs from each respective Equity Investor during fiscal year 2022. Refer to the sections entitled PPA IIIa Repowering of Energy Servers, PPA IV Repowering of Energy Servers and PPA V Interest Buyout for further details.

² Investor right on the certain date, upon giving us advance written notice, to sell the membership interests to us or resign or withdraw from the investment partnership.

³ Non-cash contributions consisted of warrants that were issued by us to respective lenders to each PPA Entity, as required by such entity's credit agreements. The corresponding values are amortized using the effective interest method over the debt term.

⁴ Formerly known as Exelon Corporation.

PPA Entities' Aggregate Assets and Liabilities

Generally, the assets of an operating company owned by an investment company can be used to settle only the operating company obligations, and the operating company creditors do not have recourse to us. The following are the aggregate carrying values of our VIEs' assets and liabilities in our consolidated balance sheets, after eliminations of intercompany transactions and balances, including as of December 31, 2022 for each of the PPA Entities in the PPA V transaction, and as of December 31, 2021 for each of the PPA Entities in the PPA IIIa transaction, the PPA IV transaction and the PPA V transaction (in thousands):

	December 31,	
	2022	2021
Assets		
Current assets:		
Cash and cash equivalents	\$ 5,008	\$ 1,541
Restricted cash	550	3,078
Accounts receivable	2,072	5,112
Customer financing receivable	—	5,784
Prepaid expenses and other current assets	1,927	3,071
Total current assets	9,557	18,586
Property and equipment, net	133,285	228,546
Customer financing receivable	—	39,484
Restricted cash	8,000	23,239
Other long-term assets	1,869	2,362
Total assets	<u>\$ 152,711</u>	<u>\$ 312,217</u>
Liabilities		
Current liabilities:		
Accrued expenses and other current liabilities	\$ 1,037	\$ 194
Deferred revenue and customer deposits	662	662
Non-recourse debt	13,307	17,483
Total current liabilities	15,006	18,339
Deferred revenue and customer deposits	4,748	5,410
Non-recourse debt	112,480	217,417
Total liabilities	<u>\$ 132,234</u>	<u>\$ 241,166</u>

We consolidated the PPA Entity as a VIE in the PPA V transaction, as we have determined that we are the primary beneficiary of this VIE. This PPA Entity contains debt that is non-recourse to us and owns Energy Server assets for which we do not have title.

We believe that by presenting assets and liabilities separate from the PPA Entities, we provide a better view of the true operations of our core business. The table below provides detail into the assets and liabilities of Bloom Energy separate from the PPA Entities. The table provides our stand-alone assets and liabilities, those of the PPA Entities combined, and our consolidated balances as of December 31, 2022 and 2021 (in thousands):

	December 31, 2022			December 31, 2021		
	Bloom Energy	PPA Entities	Consolidated	Bloom Energy	PPA Entities	Consolidated
Assets						
Current assets	\$ 1,046,406	\$ 9,557	\$ 1,055,963	\$ 787,834	\$ 18,586	\$ 806,420
Long-term assets	747,510	143,154	890,664	625,520	293,631	919,151
Total assets	<u>\$ 1,793,916</u>	<u>\$ 152,711</u>	<u>\$ 1,946,627</u>	<u>\$ 1,413,354</u>	<u>\$ 312,217</u>	<u>\$ 1,725,571</u>
Liabilities						
Current liabilities	\$ 514,224	\$ 1,699	\$ 515,923	\$ 315,792	\$ 856	\$ 316,648
Current portion of debt	12,716	13,307	26,023	8,348	17,483	25,831
Long-term liabilities	635,561	4,748	640,309	669,759	5,410	675,169
Long-term portion of debt	273,076	112,480	385,556	283,482	217,417	500,899
Total liabilities	<u>\$ 1,435,577</u>	<u>\$ 132,234</u>	<u>\$ 1,567,811</u>	<u>\$ 1,277,381</u>	<u>\$ 241,166</u>	<u>\$ 1,518,547</u>

12. Related Party Transactions

Our operations include the following related party transactions (in thousands):

	Years Ended December 31,		
	2022	2021	2020
Total revenue from related parties	\$ 36,281	\$ 16,038	\$ 7,562
Interest expense to related parties	—	—	2,513

Bloom Energy Japan Limited

In May 2013, we entered into a joint venture with Softbank Corp. (“Softbank”), which was accounted for as an equity method investment. Under this arrangement, we sold Energy Servers and provided maintenance services to the joint venture. On July 1, 2021 (the “BEJ Closing Date”), we acquired Softbank’s 50% interest in the joint venture for a cash payment of \$2.0 million and subject to a \$3.6 million earn out. As of the BEJ Closing Date, Bloom Energy Japan Limited (“Bloom Energy Japan”) is no longer considered a related party.

For the years ended December 31, 2022, 2021 and 2020, we recognized related party total revenue of nil, \$1.6 million and \$3.4 million, respectively.

SK ecoplant Joint Venture and Strategic Partnership

In September 2019, we entered into a joint venture agreement with SK ecoplant to establish a light-assembly facility in the Republic of Korea for sales of certain portions of our Energy Server for the stationary utility and commercial and industrial market in the Republic of Korea. Based on the expanded relationship between us and SK ecoplant, the joint venture in 2022 was further extended. The joint venture is a VIE of Bloom and we consolidate it in our financial statements as we are the primary beneficiary and therefore have the power to direct activities which are most significant to the joint venture. For the years ended December 31, 2022, 2021 and 2020, we recognized related party revenue of \$36.3 million, \$14.5 million and \$4.2 million, respectively. As of December 31, 2022 and 2021, we had outstanding accounts receivable of \$4.3 million and \$4.4 million, respectively.

On October 23, 2021, we expanded our existing relationship with SK ecoplant. In connection with the execution of the strategic partnership, we entered into the SPA pursuant to which we agreed to sell and issue to SK ecoplant 10,000,000 shares of Series A Redeemable Convertible Preferred Stock. In addition, SK ecoplant acquired an option to acquire a variable number of shares of our Class A Common Stock and acquired certain rights and provisions relating to the arrangement under this strategic partnership.

For additional information, see Note 17 - *SK ecoplant Strategic Investment*.

Debt to Related Parties

We had no debt or convertible notes from investors considered to be related parties as of December 31, 2022 and 2021.

13. Commitments and Contingencies

Commitments

Purchase Commitments with Suppliers and Contract Manufacturers - In order to reduce manufacturing lead-times and to ensure an adequate supply of inventories, we have agreements with our component suppliers and contract manufacturers to allow long lead-time component inventory procurement based on a rolling production forecast. We are contractually obligated to purchase long lead-time component inventory procured by certain manufacturers in accordance with our forecasts. We can generally give notice of order cancellation at least 90 days prior to the delivery date. However, we issue purchase orders to our component suppliers and third-party manufacturers that may not be cancellable. As of December 31, 2022 and December 31, 2021, we had no material open purchase orders with our component suppliers and third-party manufacturers that are not cancellable.

Performance Guarantees - We guarantee the performance of Energy Servers at certain levels of output and efficiency to its customers over the contractual term. We monitor the need for any accruals arising from such guaranties, which are calculated as the difference between committed and actual power output or between natural gas consumption at warranted efficiency levels and actual consumption, multiplied by the contractual rates with the customer. Amounts payable under these guaranties are accrued in periods when the guaranties are not met and are recorded contra service revenue in the consolidated statements of operations. We paid \$12.1 million and \$9.5 million for the years ended December 31, 2022 and 2021, respectively, for such performance guaranties.

Under the terms of the PPA I transaction, customers agreed to purchase power from our Energy Servers at negotiated rates, generally for periods of up to 15 years. We were responsible for all operating costs necessary to maintain, monitor and repair the Energy Servers, including the fuel necessary to operate the systems under PPA I. The risk associated with the future market price of fuel purchase obligations was mitigated with commodity contract futures which expired in March 2022. For additional information, see Note 5 - *Fair Value*.

Letters of Credit - In 2019, pursuant to the PPA II upgrade of Energy Servers, we agreed to indemnify our financing partner for losses that may be incurred in the event of certain regulatory, legal or legislative development and established a cash-collateralized LC facility for this purpose. There were no letters of credit or pledged funds associated with the PPA IIIa and PPA IV Upgrades. As of December 31, 2022, the balance of this cash-collateralized LC was \$69.1 million, of which \$40.6 million and \$28.5 million is recognized as short-term and long-term restricted cash, respectively. As of December 31, 2021, the balance of this cash-collateralized LC was \$99.4 million, of which \$41.7 million and \$57.7 million is recognized as short-term and long-term restricted cash, respectively.

Pledged Funds - In 2019, pursuant to the PPA IIIb upgrade of Energy Servers, we established a restricted cash fund of \$20.0 million, which had been pledged for a seven-year period to secure our operations and maintenance obligations with respect to the totality of our obligations to the financier. All or a portion of such funds would be released if we meet certain credit rating and/or market capitalization milestones prior to the end of the pledge period. If we do not meet the required criteria within the first five-year period, the funds would still be released to us over the following two years as long as the Energy Servers continue to perform in compliance with our warranty obligations. As of December 31, 2022 and 2021, the balance of the long-term restricted cash fund was \$6.7 million and \$6.7 million, respectively.

Contingencies

Indemnification Agreements - We enter into standard indemnification agreements with our customers and certain other business partners in the ordinary course of business. Our exposure under these agreements is unknown because it involves future claims that may be made against us but have not yet been made. To date, we have not paid any claims or been required to defend any action related to our indemnification obligations. However, we may record charges in the future as a result of these indemnification obligations.

Delaware Economic Development Authority - In March 2012, we entered into an agreement with the Delaware Economic Development Authority to provide a grant of \$16.5 million to us as an incentive to establish a new manufacturing facility in Delaware and to provide employment for full time workers at

the facility over a certain period of time. The grant contains two types of milestones that we must complete to retain the entire amount of the grant proceeds. The first milestone was to provide employment for 900 full time workers in Delaware by the end of the first recapture period of September 30, 2017. The second milestone was to pay these full-time workers a cumulative total of \$108.0 million in compensation by September 30, 2017. There are two additional recapture periods at which time we must continue to employ 900 full time workers and the cumulative total compensation paid by us is required to be at least \$324.0 million by September 30, 2023. As of December 31, 2022 and 2021, we had 634 and 484 full time workers in Delaware and paid \$251.2 million and \$191.4 million in cumulative compensation, respectively. We have so far received \$12.0 million of the grant, which is contingent upon meeting the milestones through September 30, 2023. In the event that we do not meet the milestones, we may have to repay the Delaware Economic Development Authority, up to an additional \$2.5 million on September 30, 2023. We repaid \$1.5 million and \$1.0 million of the grant in 2017 and 2021, respectively. As of December 31, 2022 the grant became current and we have recorded \$9.5 million in accrued expenses and other current liabilities for future repayments of this grant. As of December 31, 2021, we have recorded \$9.5 million in other long-term liabilities for potential future repayments of this grant.

Investment Tax Credits - Our Energy Servers are eligible for federal ITCs that accrued to qualified property under Internal Revenue Code Section 48 when placed into service. However, the ITC program has operational criteria that extend for five years. If the energy property is disposed of or otherwise ceases to be qualified investment credit property before the close of the five-year recapture period is fulfilled, it could result in a partial reduction of the incentives. Energy Servers are purchased by the PPA Entities, other financial sponsors, or customers and, therefore, these parties bear the risk of repayment if the assets placed in service do not meet the ITC operational criteria in the future although in certain limited circumstances we do provide indemnification for such risk.

Legal Matters - We are involved in various legal proceedings that arise in the ordinary course of business. We review all legal matters at least quarterly and assess whether an accrual for loss contingencies needs to be recorded. We record an accrual for loss contingencies when management believes that it is both probable that a liability has been incurred and the amount of the loss can be reasonably estimated. Legal matters are subject to uncertainties and are inherently unpredictable, so the actual liability in any such matters may be materially different from our estimates. If an unfavorable resolution were to occur, there exists the possibility of a material adverse impact on our consolidated financial condition, results of operations or cash flows for the period in which the resolution occurs or on future periods.

In March 2019, the Lincolnshire Police Pension Fund filed a class action complaint in the Superior Court of the State of California, County of Santa Clara, against us, certain members of our senior management, certain of our directors and the underwriters in our July 25, 2018 IPO alleging violations under Sections 11 and 15 of the Securities Act of 1933, as amended (the “Securities Act”), for alleged misleading statements or omissions in our Registration Statement on Form S-1 filed with the SEC in connection with the IPO. Two related class action cases were subsequently filed in the Santa Clara County Superior Court against the same defendants containing the same allegations; Rodriguez vs Bloom Energy et al. was filed on April 22, 2019 and Evans vs Bloom Energy et al. was filed on May 7, 2019. These cases have been consolidated. Plaintiffs’ consolidated amended complaint was filed with the court on September 12, 2019. On October 4, 2019, defendants moved to stay the lawsuit pending the federal district court action discussed below. On December 7, 2019, the Superior Court issued an order staying the action through resolution of the parallel federal litigation mentioned below. We believe the complaint to be without merit and in

contravention of our forum selection clause in our Restated Certificate of Incorporation and we intend to defend this action vigorously. We are unable to estimate any range of reasonably possible losses.

In May 2019, Elissa Roberts filed a class action complaint in the federal district court for the Northern District of California against us, certain members of our senior management team, and certain of our directors alleging violations under Sections 11 and 15 of the Securities Act for alleged misleading statements or omissions in our Registration Statement on Form S-1 filed with the SEC in connection with the IPO. On September 3, 2019, the court appointed a lead plaintiff and lead plaintiffs’ counsel. On November 4, 2019, plaintiffs filed an amended complaint adding the underwriters in the IPO and our auditor as defendants for the Section 11 claim, as well as adding claims under Sections 10(b) and 20(a) of the Securities Exchange Act of 1934, as amended (the “Exchange Act”) against us, and certain members of our senior management team. The amended complaint alleged a class period for all claims from the time of our IPO until September 16, 2019. On April 21, 2020, plaintiffs filed a second amended complaint, which continued to make the same claims and added allegations pertaining to the restatement and, as to claims under the Exchange Act, extended the putative class period through February 12, 2020. On July 1, 2020, we and the other defendants filed motions to dismiss the second amended complaint. On September 29, 2021, the court entered an order dismissing with leave to amend (1) five of seven statements or groups of statements alleged to violate Sections 11 and 15 of the Securities Act and (2) all allegations under the Exchange Act. All allegations against our auditors were also dismissed. Plaintiffs elected not to amend the complaint and instead on October 22, 2021 filed a motion for entry of final judgment in favor of our auditors so that plaintiffs could appeal the dismissal of those claims. The court denied that motion on December 1, 2021 and in response plaintiffs filed a motion asking the court to certify an interlocutory appeal as to the accounting claims. The court denied plaintiffs’ motion on April 14, 2022. The claims for violation of Sections 11 and 15 of the Securities Act that were not dismissed by the court entered the discovery phase.

On January 6, 2023, Bloom and the plaintiffs’ entered into an agreement in principle to settle the claims against Bloom, its executives and directors, and the IPO underwriters for a payment of \$3 million, which will be funded entirely by our insurers. If the settlement becomes effective, it will result in a dismissal with prejudice of all claims against us, our executives and directors, and the underwriters. The settlement does not constitute an acknowledgement of liability or wrongdoing. This settlement is conditioned on the execution of a definitive settlement agreement containing the foregoing terms and customary terms for class action settlements, and approval of the settlement by the court. If the court does not approve the settlement and all of its material terms, or the settlement does not otherwise become final or effective, proceedings in the action will continue.

In June 2021, we filed a petition for writ of mandate and a complaint for declaratory and injunctive relief in the Santa Clara Superior Court against the City of Santa Clara for failure to issue building permits for two of our customer installations and asking the court to require the City of Santa Clara to process and issue the building permits. In October 2021, we filed an amended petition and complaint that asserts additional constitutional and tort claims based on the City’s failure to timely issue the Energy Server permits. Discovery has commenced and we are aggressively pursuing all claims. On February 4, 2022, the City of Santa Clara filed a demurrer seeking to dismiss all of the Company’s claims. The trial judge rejected the demurrer on all claims except one, and allowed Bloom leave to amend that claim. The second amended petition was filed on July 5, 2022. The City of Santa Clara demurred only to the amended cause of action seeking damages for tortious conduct. The trial judge granted that demurrer and struck the tort claim on October 27, 2022; the writ of mandate and constitutional claims were allowed to proceed. The parties are currently briefing the writ of mandate claims which seek immediate issuance of the building permits. Those claims are scheduled for hearing on April 28, 2023. Discovery is continuing on the constitutional claims. If we are unable to secure building permits for these customer installations in a timely fashion, our customers will terminate their contracts with us and select another energy provider. In addition, if we are no longer able to install our Energy Servers in Santa Clara under building permits, we may not be able to secure future customer bookings for installation in the City of Santa Clara.

In February 2022, Plansee SE/Global Tungsten & Powders Corp. (“Plansee/GTP”), a former supplier, filed a request for expedited arbitration with the World Intellectual Property Organization Arbitration and Mediation Center in Geneva Switzerland, for various claims allegedly in relation to an Intellectual Property and Confidential Disclosure Agreement between Plansee/GTP and Bloom Energy Corporation. Plansee/GTP’s statement of claims includes allegations of infringement of U.S. Patent Nos. 8,802,328, 8,753,785 and 9,434,003. On April 3, 2022, we filed a complaint against Plansee/GTP in the Eastern District of Texas to address the dispute between Plansee/GTP and Bloom Energy Corporation in a proper forum before a U.S. Federal District Court. Our complaint seeks the correction of inventorship of U.S. Patent Nos. 8,802,328, 8,753,785 and 9,434,003 (the “Patents-in-Suit”); declaratory judgment of invalidity, unenforceability, and non-infringement of the Patents-in-Suit; and declaratory judgment of no misappropriation. Further, our complaint seeks to recover damages we have suffered in relation to Plansee/GTP’s business dealings that, as alleged, constitute acts of unfair competition, tortious interference contract, breach of contract, violations of the Racketeer Influenced and Corrupt Organizations (RICO) Act and violations of the Clayton Antitrust Act. On June 9, 2022, Plansee/GTP filed a motion to dismiss the complaint filed in the Eastern District of Texas and compel arbitration (or alternatively to stay). We filed our opposition on June 30, 2022, Plansee/GTP filed its reply on July 14,

2022 and we filed our sur-reply on July 22, 2022. On February 9, 2023, Magistrate Judge Payne issued a report and recommendation to stay the district court action pending an arbitrability determination by the arbitrator for each claim. Activity in the arbitration has been held in abeyance awaiting the District Court’s determination on the motion to dismiss. The arbitrator has informed the parties that activities in the WIPO arbitration will remain dormant until Judge Gilstrap rules upon any objections filed with regard to the Magistrate’s report and recommendation. Discovery has commenced in the District Court action and the parties have exchanged discovery requests. The parties have commenced claim construction exchanges under the docket control order in preparation for a Markman hearing currently scheduled for May 11, 2023. Given that the cases are still in their early stages, we are unable to predict the ultimate outcome of the arbitration and district court action at this time, and accordingly are not able to estimate a range of reasonably possible losses.

14. Segment Information

Our chief operating decision makers (“CODM”), the Chief Executive Officer and the Chief Financial Officer, review financial information presented on a consolidated basis for purposes of allocating resources and evaluating financial performance. The CODM allocate resources and make operational decisions based on direct involvement with our operations and product development efforts. We are managed under a functionally-based organizational structure with the head of each function reporting to the Chief Executive Officer. The CODM assess performance, including incentive compensation, based upon consolidated operations performance and financial results on a consolidated basis. As such, we have a single operating unit structure and are a single reporting segment.

15. Income Taxes

The components of loss before the provision for income taxes are as follows (in thousands):

	Years Ended December 31,		
	2022	2021	2020
United States	\$ (320,107)	\$ (195,208)	\$ (179,657)
Foreign	6,118	2,885	826
Total	<u>\$ (313,989)</u>	<u>\$ (192,323)</u>	<u>\$ (178,831)</u>

The provision for income taxes is comprised of the following (in thousands):

	Years Ended December 31,		
	2022	2021	2020
Current:			
Federal	\$ —	\$ —	\$ —
State	374	107	21
Foreign	1,158	1,012	472
Total current	1,532	1,119	493
Deferred:			
Federal	—	—	—
State	—	—	—
Foreign	(435)	(73)	(237)
Total deferred	(435)	(73)	(237)
Total provision for income taxes	\$ 1,097	\$ 1,046	\$ 256

A reconciliation of the U.S. federal statutory income tax rate to our effective tax rate is as follows (in thousands):

	Years Ended December 31,		
	2022	2021	2020
Tax at federal statutory rate	\$ (65,922)	\$ (40,387)	\$ (37,552)
State taxes, net of federal effect	374	107	21
Impact on noncontrolling interest	2,872	6,074	4,522
Elimination of acquiree deferred taxes	—	2,149	—
Non-U.S. tax effect	(387)	412	78
Nondeductible expenses and losses	2,258	1,311	908
Stock-based compensation	7,019	5,307	5,956
Loss on debt extinguishment	—	—	214
U.S. tax on foreign earnings (GILTI)	2,525	59	203
(Gain) loss on SK Equity Transaction	(3,932)	2,292	—
Acquisition contingent liability	—	(762)	—
Change in valuation allowance	56,290	24,484	25,906
Provision for income taxes	\$ 1,097	\$ 1,046	\$ 256

For the year ended December 31, 2022, we recognized a provision for income taxes of \$1.1 million on a pre-tax loss of \$314.0 million, for an effective tax rate of (0.3)%. For the year ended December 31, 2021, we recognized a provision for income taxes of \$1.0 million on a pre-tax loss of \$192.3 million, for an effective tax rate of (0.5)%. For the year ended December 31, 2020, we recognized a provision for income taxes of \$0.3 million on a pre-tax loss of \$178.8 million, for an effective tax rate of (0.1)%. The effective tax rate for 2022, 2021 and 2020 is lower than the statutory federal tax rate primarily due to a full valuation allowance against U.S. deferred tax assets.

Significant components of our deferred tax assets and liabilities consist of the following (in thousands):

	December 31,	
	2022	2021
Tax credits and net operating loss carryforwards	\$ 558,779	\$ 562,384
Lease liabilities	157,890	151,937
Depreciation and amortization	27,681	9,516
Deferred revenue	18,992	23,208
Accruals and reserves	21,084	14,524
Research and development expenditures capitalization	28,965	—
Stock-based compensation	22,675	20,138
Disallowed Interest expenses	29,159	26,730
Investment in PPA entities	4,354	—
Other items - deferred tax assets	1,519	1,528
Gross deferred tax assets	871,098	809,965
Valuation allowance	(758,242)	(689,257)
Net deferred tax assets	112,856	120,708
Investment in PPA entities	—	(7,911)
Managed services - deferred costs	(18,974)	(20,935)
Right-of-use assets and leased assets	(90,682)	(89,165)
Other items - deferred tax liability	(2,049)	(1,742)
Gross deferred tax liabilities	(111,705)	(119,753)
Net deferred tax asset	\$ 1,151	\$ 955

Income taxes are recorded using the asset and liability method. Deferred tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases and operating loss and tax credit carryforwards. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income (or loss) in the years in which those temporary differences are expected to be recovered or settled. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in income in the period that includes the enactment date.

A valuation allowance is provided for the amount of deferred tax assets that, based on available evidence, is not more-likely-than-not to be realized. Management believes that, based on available evidence, both positive and negative, it is not more likely than not that the net U.S. deferred tax assets will be utilized. As a result, a full valuation allowance has been recorded.

The valuation allowance for deferred tax assets was \$758.2 million and \$689.3 million as of December 31, 2022 and 2021, respectively. The net change in the total valuation allowance for the years ended December 31, 2022 and 2021 was an increase of \$69.0 million and a increase of \$74.3 million, respectively.

At December 31, 2022, we had federal and California net operating loss carryforwards of \$2.1 billion and \$1.4 billion, respectively, to reduce future taxable income. The expiration of federal and California net operating loss carryforwards is summarized as follows (in billions):

	Federal	California
Expire in 2025 - 2027	\$ 0.1	\$ —
Expire in 2028 - 2032	0.7	0.6
Expire beginning in 2033	0.9	0.8
Carryforward indefinitely	0.4	—
Total	\$ 2.1	\$ 1.4

At December 31, 2021, we also had other state net operating loss carryforwards of \$365.3 million, that will begin to expire in 2023. In addition, we had approximately \$31.0 million of federal research credit, \$6.6 million of federal investment tax credit, and \$17.4 million of state research credit carryforwards.

The expiration of the federal and California credit carryforwards is summarized as follows (in millions):

	Federal	California
Expire in 2025 - 2027	\$ 3.1	\$ —
Expire in 2028 - 2032	7.8	—
Expire beginning in 2033	26.7	—
Carryforward indefinitely	—	17.4
Total	\$ 37.6	\$ 17.4

We have not reflected deferred tax assets for the federal and state research credit carryforwards as the entire amount of the carryforwards represent unrecognized tax benefits.

Internal Revenue Code Section 382 (“Section 382”) limits the use of net operating loss and tax credit carryforwards in certain situations in which changes occur in our capital stock ownership. Any annual limitation may result in the expiration of net operating losses and credits before utilization. If we should have an ownership change, as defined by the tax law, utilization of the net operating loss and credit carryforwards could be significantly reduced. We completed a Section 382 analysis through December 31, 2022. Based on this analysis, Section 382 limitations will not have a material impact on our net operating loss and credit carryforwards related to any ownership changes.

During the year ended December 31, 2022, the amount of uncertain tax positions increased by \$6.4 million. We have not recorded any uncertain tax liabilities associated with our tax positions.

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

	Years Ended December 31,		
	2022	2021	2020
Unrecognized tax benefits beginning balance	\$ 42,010	\$ 37,753	\$ 34,480
Gross (decrease) increase for tax positions of prior year	(55)	95	307
Gross increase for tax positions of current year	6,434	4,162	2,966
Unrecognized tax benefits end balance	\$ 48,389	\$ 42,010	\$ 37,753

If fully recognized in the future, there would be no impact to the effective tax rate, and \$44.7 million would result in adjustments to the valuation allowance. We do not have any tax positions that are expected to significantly increase or decrease within the next 12 months.

Interest and penalties, to the extent there are any, would be included in income tax expense. There were no material interest or penalties accrued during or for the years ended December 31, 2022 and 2021.

We are subject to taxation in the United States and various states and foreign jurisdictions. We currently have an income tax examination in progress, and we believe that adequate amounts have been reserved. All of our tax years will remain open for examination by federal and state authorities for three and four years from the date of utilization of any net operating losses and tax credits.

The Tax Cuts and Jobs Act of 2017 (“Tax Act”) includes a provision referred to as Global Intangible Low-Taxed Income (“GILTI”) which generally imposes a tax on foreign income in excess of a deemed return on tangible assets. Guidance issued by the Financial Accounting Standards Board in January 2018 allows companies to make an accounting policy election to either (i) account for GILTI as a component of tax expense in the period in which the tax is incurred (“period cost method”), or (ii) account for GILTI in the measurement of deferred taxes (“deferred method”). We elected to account for the tax effects of this provision using the period cost method.

The Coronavirus Aid, Relief, and Economic Security Act (the “CARES Act”) was enacted in the United States on March 27, 2020. The CARES Act includes several U.S. income tax provisions related to, among other things, net operating loss carrybacks, alternative minimum tax credits, modifications to the net interest deduction limitations, and technical amendments regarding the income tax depreciation of qualified improvement property placed in service after December 31, 2017. The CARES Act did not have a material impact on our financial results for the year ended December 31, 2022 and 2021.

On August 16, 2022, the U.S. government enacted the IRA. The IRA establishes a new corporate alternative minimum tax based on financial statement income adjusted for certain items. The new minimum tax is effective for tax years beginning after December 31, 2022. The enactment of the IRA did not have a material impact to the Company’s financial statements for the years ended December 31, 2022 and 2021, but we are currently assessing the impact of the production and tax credit-related IRA provisions on our business for future periods.

Our accumulated undistributed foreign earnings as of December 31, 2022 have been subject to either the deemed one-time mandatory repatriation under the Tax Act or the current year income inclusion under GILTI regime for U.S. tax purposes. If we were to make actual distributions of some or all of these earnings, including earnings accumulated after December 31, 2017, we would generally incur no additional U.S. income tax but could incur U.S. state income tax and foreign withholding taxes. We have not accrued for these potential U.S. state income tax and foreign withholding taxes because we intend to permanently reinvest our foreign earnings in our international operations. However, any additional income tax associated with the distribution of these earnings would be immaterial.

16. Net Loss per Share Available to Common Stockholders

Net loss per share (basic) available to common stockholders is calculated by dividing net loss available to common stockholders by the weighted-average shares of common stock outstanding for the period. Net loss per share is the same for each class of common stock as they are entitled to the same liquidation and dividend rights. As a result, net loss per share (basic) and net loss per share (diluted) available to common stockholders are the same for both Class A and Class B common stock and are combined for presentation.

Net loss per share (diluted) is computed by using the if-converted method when calculating the potentially dilutive effect, if any, of our convertible notes. Net loss per share (diluted) available to common stockholders is then calculated by dividing the resulting adjusted net loss available to common stockholders by the combined weighted-average number of fully diluted common shares outstanding. There were no adjustments to net loss available to common stockholders (diluted). Equally, there were no adjustments to the weighted average number of outstanding shares of common stock (basic) in arriving at the weighted average number of outstanding shares (diluted), as such adjustments would have been antidilutive.

The following table sets forth the computation of our net loss per share available to common stockholders, basic and diluted (in thousands, except per share amounts):

	Years Ended December 31,		
	2022	2021	2020
Numerator:			
Net loss available to Class A and Class B common stockholders	\$ (301,708)	\$ (164,473)	\$ (157,574)
Denominator:			
Weighted average shares of common stock, basic and diluted	185,907	173,438	138,722
Net loss per share available to Class A and Class B common stockholders, basic and diluted	\$ (1.62)	\$ (0.95)	\$ (1.14)

The following common stock equivalents (in thousands) were excluded from the computation of our net loss per share available to common stockholders, diluted, for the years presented as their inclusion would have been antidilutive (in thousands):

	Years Ended December 31,		
	2022	2021	2020
Convertible notes	14,187	14,187	29,729
Redeemable convertible preferred stock	8,521	82	—
Stock options and awards	5,683	7,018	6,109
	28,391	21,287	35,838

As of December 31, 2022, pursuant to the notice received from SK ecoplant of its intent to exercise its option to purchase additional shares of our Class A common stock (see Note 5 - *Fair Value*), there were an additional 13,491,701 common stock equivalents that were excluded from the table above.

17. SK ecoplant Strategic Investment

In October 2021, we expanded our existing relationship with SK ecoplant. As part of this arrangement, we amended the previous Preferred Distribution Agreement (“PDA”) and Joint Venture Agreement (“JVA”) with SK ecoplant. The restated PDA establishes SK ecoplant’s purchase commitments for our Energy Servers for the next three years on a take or pay basis as well as the basis for determining the prices at which the Energy Servers and related components will be sold. The restated JVA increases the scope of assembly done by the joint venture facility in the Republic of Korea, which was established in 2019, for the procurement of local parts for our Energy Servers and the assembly of certain portions of the Energy Servers for the South Korean market. The joint venture is a VIE of Bloom and we consolidate it in our financial statements as we are the primary beneficiary and therefore have the power to direct activities which are most significant to the joint venture.

The following are the aggregate carrying values of the Korean joint venture's assets and liabilities in our consolidated balance sheets, after eliminations of intercompany transactions and balances, as of December 31, 2022 and 2021 (in thousands):

	December 31,	
	2022	2021
Assets		
Current assets:		
Cash and cash equivalents	\$ 2,591	\$ 2,955
Accounts receivable	4257	4362
Inventories	13,412	4,363
Prepaid expenses and other current assets	2,645	99
Total current assets	22,905	11,779
Property and equipment, net	1,141	1,101
Operating lease right-of-use assets	2,390	569
Other long-term assets	47	231
Total assets	<u>\$ 26,483</u>	<u>\$ 13,680</u>
Liabilities		
Current liabilities:		
Accounts payable	\$ 5,607	\$ 3,006
Accrued expenses and other current liabilities	1,355	567
Deferred revenue and customer deposits	2	475
Operating lease liabilities	393	175
Total current liabilities	7,357	4,223
Operating lease liabilities	2,000	402
Total liabilities	<u>\$ 9,357</u>	<u>\$ 4,625</u>

We also entered into a new Commercial Cooperation Agreement (the “CCA”) regarding initiatives pertaining to the hydrogen market and general market expansion for our products.

Simultaneous with the execution of the above agreements, we entered into a SPA pursuant to which we agreed to sell and issue to SK ecoplant 10,000,000 shares of Series A RCPS, par value \$0.0001 per share, at a purchase price of \$25.50 per share for an aggregate purchase price of \$255.0 million. On December 29, 2021, the closing of the sale of RCPS was completed and we issued the 10,000,000 shares of RCPS (the “Initial Investment”).

We determined the fair value of the RCPS on the date of issuance thereof to be \$218.0 million. We determined that the sale of the RCPS should be recorded at fair value. Accordingly, we allocated the excess of the cash proceeds received of \$255.0 million plus the change in fair value of the RCPS between October 23, 2021, and December 29, 2021, of \$9.7 million, over the fair value of the RCPS on December 29, 2021, and the fair value of the Option on October 23, 2021, to the PDA. This excess amounted to \$37.0 million and will be recognized as revenue over the take or pay period based on an estimate of the revenue we expect to receive under the PDA. Accordingly, during the year ended December 31, 2022 and 2021, we recognized Product Revenue of \$9.6 million and \$2.8 million, respectively, in connection with this arrangement. The unrecognized amount of \$24.6 million and \$34.2 million included \$10.0 million and \$7.8 million in current deferred revenue and customer deposits and \$14.6 million and \$26.4 million in non-current deferred revenue and customer deposits on the consolidated balance sheet as of December 31, 2022 and 2021, respectively.

As of December 31, 2021, the RCPS has been presented outside of permanent equity in the mezzanine section of the consolidated balance sheets because there are certain redemption provisions upon liquidation, dissolution, or deemed liquidation events (which include a change in control and the sale or other disposition of all or substantially all of our assets), which are considered contingent redemption provisions that are not solely within our control.

We incurred transaction costs of \$9.8 million in connection with this arrangement. We allocated the transaction costs between the RCPS, and the Option based on their relative fair values. Accordingly, an amount of \$9.4 million is set off against the carrying amount of the RCPS with the balance of \$0.4 million included in other income (expense), net in our consolidated statements of operations.

On November 8, 2022, each share of RCPS was converted into 10,000,000 shares of Class A Common Stock.

In addition to the Initial Investment, the SPA provided SK ecoplant with an option to acquire a variable number of shares of Class A Common Stock (the “Option”). The number of shares SK ecoplant may acquire under the Option (the “Option Shares”) is calculated as the lesser of (i) 11,000,000 shares of Class A Common Stock plus the number of shares of Class A Common Stock that SK ecoplant must hold to become our largest shareholder by no less than 1% of our issued and outstanding capital stock as of the issuance date of the Option Shares; and (ii) 15% of our issued and outstanding capital stock as of the issuance date of the Option Shares. The exercise price of the Option is calculated as the higher of (i) \$23.00 per share and (ii) 115% of the volume-weighted average closing price of the 20 consecutive trading day period immediately preceding the exercise of the Option. According to the SPA SK ecoplant was entitled to exercise the Option through August 31, 2023, and the transaction must have been completed as of November 30, 2023.

PDA, JVA, CCA and the SPA entered into with SK ecoplant concurrently should be evaluated as a combined contract in accordance with ASC 606 and, to the extent applicable for separated components, under the guidance of Topic 815 - *Derivatives and Hedging* and applicable subsections and ASC 480 - *Distinguishing Liabilities from Equity*.

We concluded that the Option was a freestanding financial instrument that should have been separately recorded at fair value on the date the SPA was executed. We determined the fair value of the Option on that date to be \$9.6 million.

On August 10, 2022, pursuant to the SPA, SK ecoplant notified us of its intent to exercise its option to purchase additional shares of our Class A common stock, pursuant to a Second Tranche Exercise Notice (as defined in the SPA) electing to purchase 13,491,701 shares at a purchase price of \$23.05 per share. Upon receipt of SK’s notice the purchase price and the number of shares of Class A Common Stock that SK will purchase under the Option were fixed. The payment for the Second Tranche Shares was agreed to be due the later of (i) December 6, 2022 and (ii) upon clearance under the HSR of the sale of the Second Tranche Shares as contemplated by the Second Tranche Exercise Notice. The Option was fair valued as of the notice date at \$4.2 million, and gain on revaluation of \$9.0 million was recorded under other income (expense), net in our consolidated statements of operations. Upon the receipt of the notice from SK ecoplant the Option met the criteria of equity award and was classified as a forward contract as part of additional paid-in capital.

HSR approval was received in November 2022. On December 6, 2022, SK and Bloom mutually agreed to delay the Second Closing Date for the purchase of the 13,491,701 shares of Class A Common Stock of the Issuer until March 31, 2023, unless an earlier date is mutually agreed upon and subject to and assuming the satisfaction of applicable regulatory clearance. The mutual agreement to modify the Second Closing Date did not change the accounting or valuation of the equity-classified forward recorded.

18. Subsequent Events

There have been no subsequent events that occurred during the period subsequent to the date of these consolidated financial statements that would require adjustment to our disclosure in the consolidated financial statements as presented.

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

None.

ITEM 9A - CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

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

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, has evaluated the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act), as of December 31, 2022. Based on such evaluation, our Chief Executive Officer and Chief Financial Officer have concluded that as of December 31, 2022, our disclosure controls and procedures were effective.

Inherent Limitations on Effectiveness of Internal Controls

Our management, including the Chief Executive Officer and Chief Financial Officer, does not expect that our disclosure controls or our internal controls over financial reporting will prevent or detect all errors and all fraud. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the control system's objectives will be met. The design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Further, because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that misstatements due to error or fraud will not occur or that all control issues and instances of fraud, if any, have been detected. The design of any system of controls is based in part on certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions. Projections of any evaluation of the effectiveness of controls to future periods are subject to risks. Over time, controls may become inadequate because of changes in business conditions or deterioration in the degree of compliance with policies or procedures.

Changes in Internal Control over Financial Reporting

During the three months ended December 31, 2022, there were no changes in our internal control over financial reporting, which were identified in connection with management's evaluation required by paragraphs (d) of Rules 13a-15 and 15d-15 under the Exchange Act, that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Management's Report on Internal Control over Financial Reporting

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, is responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) to provide reasonable assurance regarding the reliability of our financial reporting and the preparation of consolidated financial statements for external reporting purposes in accordance with U.S. GAAP.

Management assessed the effectiveness of our internal control over financial reporting as of December 31, 2022, the end of our fiscal year. Management based its assessment on the framework established in the *2013 Internal Control - Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission ("2013 COSO framework"). Management's assessment included evaluation of elements such as the design and operating effectiveness of key financial reporting controls, process documentation, accounting policies, and our overall control environment. This assessment is supported by testing and monitoring performed by our internal audit and finance personnel utilizing the 2013 COSO framework.

Based on its assessment, management has concluded that our internal control over financial reporting was effective as of the end of fiscal 2022 to provide reasonable assurance regarding the reliability of financial reporting and the preparation of consolidated financial statements for external reporting purposes in accordance with U.S. GAAP.

The effectiveness of our internal control over financial reporting as of the end of fiscal 2022 has been audited by Deloitte & Touche LLP, an independent registered public accounting firm, as stated in their report, which is included elsewhere herein.

ITEM 9B - OTHER INFORMATION

None.

ITEM 9C - DISCLOSURE REGARDING FOREIGN JURISDICTIONS THAT PREVENT INSPECTIONS

Not applicable.

Part III

ITEM 10 - DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

Except as indicated below, the information required by this Item 10 is incorporated herein by reference to our Proxy Statement for the 2023 Annual Meeting of Stockholders to be filed with the SEC within 120 days of the year ended December 31, 2022. (the “2023 Annual Meeting”), including under the headings “Corporate Governance,” “Information about Our Executive Officers,” “Business Ethics and Compliance,” and “Delinquent Section 16(a) Reports,” if applicable.

We have adopted a Global Code of Business Conduct and Ethics (the “Code of Conduct”) that applies to all of our and our subsidiaries’ directors, officers, employees, and contractors, including our principal executive, principal financial and principal accounting officers, or persons performing similar functions. Our Code of Conduct is posted on our website located at <https://investor.bloomenergy.com> under “Corporate Governance”. We intend to disclose future amendments to certain provisions of the Code of Conduct, and waivers of the Code of Conduct granted to executive officers and directors, on the website within four business days following the date of the amendment or waiver.

ITEM 11 - EXECUTIVE COMPENSATION

The information required by this Item 11 is incorporated herein by reference to our Proxy Statement for the 2023 Annual Meeting, including under the headings “Executive Compensation”, “Compensation Committee Interlocks and Insider Participation”, and “Compensation Committee Report”.

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

The information required by this Item 12 is incorporated herein by reference to our Proxy Statement for the 2023 Annual Meeting, including under the headings “Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters” and “Equity Compensation Plan Information”.

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

The information required by this Item 13 is incorporated herein by reference to our Proxy Statement for the 2023 Annual Meeting, including under the headings “Related-Party Transactions” and “Director Independence”.

ITEM 14 - PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information required by this Item 14 is incorporated herein by reference to our Proxy Statement for the 2023 Annual Meeting, including under the heading “Principal Accountant Fees and Services”.

Part IV

ITEM 15 - EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

(a) The following documents are filed as part of this report:

1. Financial Statements

See “Index to Consolidated Financial Statements and Supplementary Data” within the Consolidated Financial Statements herein.

2. Financial Statement Schedules

All financial statement schedules have been omitted since the required information was not applicable or was not present in amounts sufficient to require submission of the schedules, or because the information required is included in the consolidated financial statements or the accompanying notes.

3. Exhibits

See the following Index to Exhibits.

Index to Exhibits

The exhibits listed below are filed or incorporated by reference as part of this Annual Report on Form 10-K.

Exhibit Number	Description	Incorporated by Reference			
		Form	File No.	Exhibit	Filing Date
3.1	Restated Certificate of Incorporation	10-Q	001-38598	3.1	9/7/2018
3.2	Certificate of Amendment to the Restated Certificate of Incorporation of Bloom Energy Corporation	10-Q	001-38598	3.1	8/9/2022
3.3	Amended and Restated Bylaws, effective November 8, 2022	8-K	001-38598	3.1	2/17/2023
3.4	Certificate of Designation of Series A Redeemable Convertible Preferred Stock	8-K	001-38598	3.1	12/30/2021
4.1	Form of Common Stock Certificate of the Registrant	S-1/A	333-225571	4.1	7/9/2018
4.2	Agreement and Warrant to Purchase Series F Preferred Stock by and between PE12GVVC (US Direct) Ltd. and the Registrant, dated July 1, 2014	S-1	333-225571	4.11	6/12/2018
4.3	Agreement and Warrant to Purchase Series F Preferred Stock by and between PE12PXVC (US Direct) Ltd. and the Registrant, dated July 1, 2014	S-1	333-225571	4.12	6/12/2018
4.4	Warrant to Purchase Preferred Stock by and between Atel Ventures, Inc., in its capacity as Trustee for its assignee affiliated funds, and the Registrant, dated December 31, 2012	S-1	333-225571	4.13	6/12/2018
4.5	Plain English Warrant Agreement by and between Triplepoint Capital LLC, a Delaware limited liability company, and the Registrant, dated September 27, 2012	S-1	333-225571	4.14	6/12/2018
4.6	Form of Holder Voting Agreement, between KR Sridhar and certain parties thereto	S-1/A	333-225571	4.26	7/9/2018
4.7	Description of Company’s securities registered pursuant to Section 12 of the Securities Exchange Act of 1934, as amended	10-K	001-38598	4.7	2/25/2022

4.8		Form of Indenture for Senior Secured Notes due 2027	10-Q	001-38598	4.4	5/11/2020
4.9		Form of 10.25% Senior Secured Notes due 2027	10-Q	001-38598	4.5	5/11/2020
4.10		Form of Security Agreement for Senior Secured Notes due 2027	10-Q	001-38598	4.6	5/11/2020
4.11		Indenture, dated as of August 11, 2020, between Bloom Energy Corporation and U.S. Bank National Association, as trustee	8-K	001-38598	4.1	8/11/2020
4.12		Form of certificate representing the 2.50% Green Convertible Senior Notes due 2025 (included as Exhibit A to Exhibit 4.11 hereto)	8-K	001-38598	4.2	8/11/2020
10.1	^	2002 Equity Incentive Plan and form of agreements used thereunder	S-1	333-225571	10.2	6/12/2018
10.2	^	2012 Equity Incentive Plan and form of agreements used thereunder	S-1	333-225571	10.3	6/12/2018
10.3	^	2018 Equity Incentive Plan and form of agreements used thereunder	S-1/A	333-225571	10.4	7/9/2018
10.4	^	Amended and Restated 2018 Employee Stock Purchase Plan	8-K	001-38598	10.1	5/16/2022
10.5		Lease, dated as of December 23, 2020, between Google LLC and Registrant	10-K	001-38598	10.5	2/26/2021
10.6		Ground Lease by and between 1743 Holdings, LLC and the Registrant dated as of March 2012	S-1	333-225571	10.8	6/12/2018
10.7		Net Lease Agreement, dated as of April 4, 2018, by and between the Registrant and 237 North First Street Holdings, LLC	S-1	333-225571	10.29	6/12/2018
10.8		Grant Agreement by and between the Delaware Economic Development Authority and the Registrant, dated March 1, 2012	S-1	333-225571	99.1	6/12/2018
10.9	^	Form of Indemnification Agreement	10-Q	001-38598	10.1	9/7/2018
10.10	^	Form of Offer Letter	10-K	001-38598	10.27	3/22/2019
10.11	*	Preferred Distributor Agreement by and between Registrant and SK Engineering & Construction Co., Ltd dated November 14, 2018	10-K	001-38598	10.28	3/22/2019
10.12	*	Third Amended and Restated Purchase, Use and Maintenance Agreement between Registrant and 2016 ESA Project Company, LLC, dated as of September 26, 2018	10-K	001-38598	10.29	3/22/2019
10.13		Amendment No. 1 to Third Amended and Restated Purchase, Use and Maintenance Agreement by and between Registrant and 2016 ESA Project Company, LLC dated as of September 28, 2018	10-K	001-38598	10.30	3/22/2019
10.14		Amendment No. 2 to Third Amended and Restated Purchase, Use and Maintenance Agreement by and between Registrant and 2016 ESA Project Company, LLC dated as of December 19, 2018	10-K	001-38598	10.31	3/22/2019
10.15	*	Equity Capital Contribution Agreement between the Company, SP Diamond State Class B Holdings, LLC, Diamond State Generation Partners, LLC, and Diamond State Generation Holdings, LLC, dated June 14, 2019	10-Q	001-38598	10.1	8/14/2019
10.16	*	Third Amended and Restated Limited Liability Company Agreement of Diamond State Generation Holdings LLC dated June 14, 2019	10-Q	001-38598	10.2	8/14/2019

10.17	*	Fuel Cell System Supply and Installation Agreement between the Company and Diamond State Generation Partners LLC, dated June 14, 2019	10-Q	001-38598	10.3	8/14/2019
10.18	*	Amended and Restated Master Operations and Maintenance Agreement between the Company and Diamond State Generation Partners LLC, dated June 14, 2019	10-Q	001-38598	10.4	8/14/2019
10.19	*	Repurchase Agreement between the Company and Diamond State Generation Partners LLC, dated June 14, 2019	10-Q	001-38598	10.5	8/14/2019
10.20	*	Third Amended and Restated Limited Liability Company Agreement of Diamond State Generation Partners, LLC dated June 14, 2019	10-Q	001-38598	10.6	8/14/2019
10.21	*	Annex 1 (Definitions) to Equity Capital Contribution Agreement (Ex 10.1) and Limited Liability Agreements (Exs. 10.2 and 10.6)	10-Q	001-38598	10.7	8/14/2019
10.22	*	Purchase, Use and Maintenance Agreement between the Company and 2018 ESA Project Company, LLC dated June 28, 2019	10-Q	001-38598	10.8	8/14/2019
10.23	*	Annexes to Purchase, Use and Maintenance Agreement between the Company and 2018 ESA Project Company, LLC dated June 28, 2019	10-Q	001-38598	10.9	8/14/2019
10.24	^	Bloom Energy Corporation 2021 Deferred Compensation Plan	10-K	001-38598	10.26	2/26/2021
10.25	*	Fourth Amended and Restated Limited Liability Company Agreement of Diamond State Generation Partners, LLC dated as of December 23, 2019	10-K	001-38598	10.32	3/31/2020
10.26	*	Fuel Cell System Supply and Installation Agreement between Bloom Energy Corporation and Diamond State Generation Partners, LLC dated as of December 23, 2019	10-K	001-38598	10.33	3/31/2020
10.27	*	Second Amended and Restated Administrative Services Agreement by and between Bloom Energy Corporation and Diamond State Generation Partners, LLC dated as of December 23, 2019	10-K	001-38598	10.34	3/31/2020
10.28	*	Equity Capital Contribution Agreement with respect to Diamond State Generation Partners, LLC by and among Bloom Energy Corporation, Diamond State Generation Holdings, LLC, SP Diamond State Class B Holdings LLC, Assured Guaranty Municipal Corp. and Diamond State Generation Partners LLC, dated as of December 23, 2019	10-K	001-38598	10.35	3/31/2020
10.29	*	Second Amended and Restated Master Operations and Maintenance Agreement between Bloom Energy Corporation as Operator and Diamond State Generation Partners, LLC dated as of December 23, 2019	10-K	001-38598	10.36	3/31/2020
10.30		First Amendment to Repurchase Agreement between the Company and Diamond State Generation Partners LLC, dated June 14, 2019	10-K	001-38598	10.37	3/31/2020
10.33	^	Offer Letter between the Company and Gregory Cameron, dated March 20, 2020	8-K	001-38598	10.1	4/2/2020
10.34		Note Purchase Agreement among the Registrant, the guarantor named therein, and the purchasers listed therein, dated as of March 30, 2020	10-Q	001-38598	10.3	5/11/20

10.35		Amendment Support Agreement by and among the Registrant and the investors named therein, dated as of March 31, 2020	10-Q	001-38598	10.4	5/11/20
10.36	*	Amended and Restated Purchase, Use and Maintenance Agreement between the Company and 2018 ESA Project Company, LLC dated June 30, 2020	10-Q/A	001-38598	10.2	8/5/2020
10.37	*	Preferred Distributor Agreement by and between Registrant and SK D&D Co., Ltd dated January 30, 2019	10-K	001-38598	10.44	2/26/2021
10.38		Lease Agreement between Pacific Commons Owner, LP, and Bloom Energy Corporation entered into as of March 13, 2021	10-Q	001-38598	10.1	5/6/2021
10.39	^	Offer Letter between the Registrant and Guillermo Brooks dated May 31, 2021	10-Q	001-38598	10.1	8/6/2021
10.40		Third Amendment to Net Lease Agreement, dated as of June 6, 2021, by and between the Registrant and SPUS9 at First Street, LP	10-Q	001-38598	10.2	8/6/2021
10.41	*	Purchase, Engineering, Procurement and Construction Contract between the Registrant, RAD 2021 Bloom ESA Funds I - V, and RAD Bloom Project Holdco LLC, dated as of June 25, 2021	10-Q	001-38598	10.3	8/6/2021
10.42	*	Operations and Maintenance Agreement between the Registrant and RAD Bloom Project Holdco LLC, dated as of June 25, 2021	10-Q	001-38598	10.4	8/6/2021
10.43	^	Form of Employment, Change in Control and Severance Agreement	10-Q	001-38598	10.5	8/6/2021
10.44	^	Form of Preferred Stock Unit Agreement under 2018 Equity Incentive Plan	10-K	001-38598	10.46	2/25/2022
10.45		Securities Purchase Agreement, dated October 23, 2021, by and among the Company and SK ecoplant Co., Ltd.	8-K	001-38598	10.1	10/25/2021
10.46	*	Amended and Restated Preferred Distributor Agreement, dated October 23, 2021, by and among the Registrant, Bloom SK Fuel Cell, LLC, and SK ecoplant Co., Ltd.	10-Q	001-38598	10.2	11/5/2021
10.47		Amendment to the Joint Venture Agreement, dated October 23, 2021, by and between the Registrant and SK ecoplant Co., Ltd.	10-Q	001-38598	10.3	11/5/2021
10.48		Investor Agreement, dated December 29, 2021, by and among the Registrant and SK ecoplant Co., Ltd.	8-K	001-38598	10.1	12/30/2021
10.49	*	Master Supply Agreement, dated December 24, 2021, by and between Registrant and SK E&C BETEK Corporation	10-K	001-38598	10.51	2/25/2022
21.1		List of Subsidiaries				Filed herewith
23.2		Consent of Independent Registered Public Accounting Firm, Deloitte & Touche LLP				Filed herewith
31.1		Certification of the Chief Executive Officer pursuant to Rule 13a-14(a) and 15d-14(a) of the Securities and Exchange Act of 1934, as amended, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002				Filed herewith

31.2		Certification of the Chief Financial Officer pursuant to Rule 13a-14(a) and 15d-14(a) of the Securities and Exchange Act of 1934, as amended, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002				Filed herewith
32.1		Certification of the Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002				Furnished herewith
101.INS		XBRL Instance Document- the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document				Filed herewith
101.SCH		Inline XBRL Taxonomy Extension Schema Document				Filed herewith
101.CAL		Inline XBRL Taxonomy Extension Calculation Linkbase Document				Filed herewith
101.DEF		Inline XBRL Taxonomy Extension Definition Linkbase Document				Filed herewith
101.LAB		Inline XBRL Taxonomy Extension Label Linkbase Document				Filed herewith
101.PRE		Inline XBRL Taxonomy Extension Presentation Linkbase Document				Filed herewith
104		Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)				

^ Management contracts or compensation plans or arrangements in which directors or executive officers are eligible to participate.

* Certain identified information has been omitted by means of marking such information with asterisks in reliance on Item 601(b)(10)(iv) of Regulation S-K because it is both (i) not material and (ii) the type that the registrant treats as private or confidential.

ITEM 16 - FORM 10-K SUMMARY

None.

SIGNATURES

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

BLOOM ENERGY CORPORATION

Date: February 21, 2023

By: /s/ KR Sridhar

KR Sridhar

Founder, Chief Executive Officer, Chairman and Director
(Principal Executive Officer)

Date: February 21, 2023

By: /s/ Gregory Cameron

Gregory Cameron

President and Chief Financial Officer
(Principal Financial and Accounting Officer)

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints KR Sridhar and Gregory Cameron, and each of them individually, as his or her attorney-in-fact, each with full power of substitution, for him or her in any and all capacities, to sign any and all amendments to this Annual Report on Form 10-K, and to file the same, with exhibits thereto and all other documents in connection therewith, with the Securities and Exchange Commission, hereby ratifying and confirming all that said attorney-in-fact, or his substitute or substitutes, may do or cause to be done by virtue hereof. Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed by the following persons on behalf of the registrant in the capacities and on the dates indicated.

Date: February 21, 2023

/s/ KR Sridhar

KR Sridhar
Founder, Chief Executive Officer, Chairman and Director
(Principal Executive Officer)

Date: February 21, 2023

/s/ Gregory Cameron

Gregory Cameron
President and Chief Financial Officer
(Principal Financial and Accounting Officer)

Date: February 21, 2023

/s/ Michael Boskin

Michael Boskin
Director

Date: February 21, 2023

/s/ Mary K. Bush

Mary K. Bush
Director

Date: February 21, 2023

/s/ John T. Chambers

John T. Chambers
Director

Date: February 21, 2023

/s/ Jeffrey Immelt

Jeffrey Immelt
Director

Date: February 21, 2023

/s/ Eddy Zervigon

Eddy Zervigon
Director

Bloom Energy Corporation
Subsidiaries*

<u>Name of Subsidiary</u>	<u>Jurisdiction</u>
2015 ESA HoldCo, LLC	Delaware
2015 ESA InvestCo, LLC	Delaware
2015 ESA Project Company, LLC	Delaware
Clean Technologies 2015, LLC	Delaware
Clean Technologies II, LLC	Delaware
Diamond State Generation Holdings, LLC	Delaware
Bloom Energy (India) Pvt. Ltd	India

*Pursuant to Item 601(b)(21)(ii) of Regulation S-K, the names of other subsidiaries of Bloom Energy Corporation are omitted because, considered in the aggregate, they would not constitute a significant subsidiary as of the end of the year covered by this Annual Report on Form 10-K.

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in Registration Statement No. 333-260464 on Form S-3 and Registration Statement Nos. 333-266703, 333-263054, 333-253625, 333-237538 and 333-226369 on Form S-8 of our reports dated February 23, 2023, relating to the consolidated financial statements of Bloom Energy Corporation and the effectiveness of Bloom Energy Corporation's internal control over financial reporting appearing in this Annual Report on Form 10-K for the year ended December 31, 2022.

/s/ Deloitte & Touche LLP

San Jose, California
February 21, 2023

CERTIFICATIONS OF CHIEF EXECUTIVE OFFICER
PURSUANT TO RULE 13a-14(a) AND RULE 15d-14(a)
OF THE SECURITIES EXCHANGE ACT OF 1934, AS AMENDED,
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, KR Sridhar, certify that:

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

Date: February 21, 2023

By: /s/ KR Sridhar

KR Sridhar

Founder, Chief Executive Officer, Chairman and Director
(Principal Executive Officer)

CERTIFICATIONS OF CHIEF FINANCIAL OFFICER
PURSUANT TO RULE 13a-14(a) AND RULE 15d-14(a)
OF THE SECURITIES EXCHANGE ACT OF 1934, AS AMENDED,
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Gregory Cameron, certify that:

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

Date: February 21, 2023

By: /s/ Gregory Cameron

Gregory Cameron
President and Chief Financial Officer
(Principal Financial and Accounting Officer)

**CERTIFICATIONS OF CHIEF EXECUTIVE OFFICER AND CHIEF FINANCIAL OFFICER
PURSUANT TO 18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO SECTION 906 OF
THE SARBANES-OXLEY ACT OF 2002**

The following certifications are hereby made in connection with the Annual Report on Form 10-K for the year ended December 31, 2022 of Bloom Energy Corporation (the “Company”) as filed with the Securities and Exchange Commission on the date hereof (the “Report”):

I, KR Sridhar, President and Chief Executive Officer, hereby certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that, to the best of my knowledge:

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

Date: February 21, 2023

By: /s/ KR Sridhar

KR Sridhar
Founder, Chief Executive Officer, Chairman and Director
(Principal Executive Officer)

I, Gregory Cameron, Executive Vice President and Chief Financial Officer, hereby certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that, to the best of my knowledge:

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

Date: February 21, 2023

By: /s/ Gregory Cameron

Gregory Cameron
President and Chief Financial Officer
(Principal Financial and Accounting Officer)