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, 2021
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

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

Delaware	**77-0565408**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
4353 North First Street, San Jose, California	**95134**
(Address of principal executive offices)	(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.

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 $3.8 billion based upon the closing price of $26.87 per share of our Class A common stock on the New York Stock Exchange on June 30, 2021 (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% of more of the outstanding Class A common stock have been excluded in that such persons may be deemed to be affiliates. The determination of affiliate status if not necessarily a conclusive determination for other purposes.

The number of shares of the registrant's common stock outstanding as of February 15, 2022 was as follows:

Class A Common Stock, $0.0001 par value 161,284,535 shares

Class B Common Stock, $0.0001 par value 15,832,833 shares

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's definitive proxy statement for the 2022 Annual Meeting of Stockholders (the "2022 Proxy Statement") are incorporated into Part III hereof. The 2022 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, 2021.

Bloom Energy Corporation
Annual Report on Form 10-K for the Years Ended December 31, 2021
Table of Contents

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; statements about our supply chain; 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; 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 Electrolyzer; 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 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 necessary for the full 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 in order to deliver 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 making renewable fuel production a reality 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.

Our team has decades of experience in the various specialized disciplines and systems engineering concepts embedded in our technology. We have 287 issued patents in the United States and 147 issued patents internationally as of December 31, 2021.

The United States is currently our biggest market and represents our largest installed base of Bloom Energy Servers. Some of our largest customers in the United States include AT&T, Caltech, Delmarva Power & Light Company, Equinix, The Home Depot, Kaiser Permanente and The Wonderful Company. We also work with a number of U.S. financing partners who purchase and deploy our systems at end-customers' facilities in order to provide "electricity-as-a service."

Outside of the United States, the Republic of Korea is a world leader in the deployment of fuel cells for utility-scale electric power generation. We entered this market with a first deployment of an 8.35-megawatt ("MW") Bloom Energy Server solution for a Korean utility that began commercial operation in 2018. The Republic of Korea now represents our second-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 in the United States and the Republic of Korea to advance green hydrogen commercialization, and an equity investment in Bloom Energy.

We are also operating smaller deployments in India and Japan with commercial customers, with additional projects in development in Europe, Southeast Asia and Australia.

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 will 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 ubiquitous and highly personalized distributed technologies seen today, as well as the reimagining of business processes, culture and customer experiences.

Resilience 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. 2021 was characterized by increasing, frequent and costly extreme weather events. In the United States alone, there were 20 weather/climate disaster events with losses exceeding $1 billion each. These events included droughts, flooding, tropical cyclones, tsunamis, wildfires and winter storms, resulting in billions of dollars in economic impact. 2021 was also the seventh consecutive year with 10 or more billion dollar climate-related events in the United States. Extreme weather's economic toll is rising as well. The total cost of 2021's billion dollar weather events is estimated at $145 billion, the third most costly year on record, while the total cost for the last five years exceeds one-third of the total disaster cost of the last 42 years.

Stakeholders across industries grapple with the question of how to prepare for more 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.

Rise in centralized capacity constraints. The traditional centralized grid model is increasingly showing weaknesses. For example, in the summer of 2021, 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.

Increasing focus on reducing harmful local emissions. Air pollution is the fifth leading risk factor for mortality worldwide. Indeed, 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. And, unfortunately, 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. Policymakers are rightly increasing the emphasis on reducing such harmful local emissions as they consider the adoption of Renewable Portfolio Standards ("RPS") or other mandated targets for low- or zero-carbon power generation.

Hydrogen is key to a zero-carbon future. We believe hydrogen will be a critical foundation for the energy industry of the future, a truly clean alternative for both natural gas and transportation fuels. Hydrogen's unique advantages – high energy density, zero carbon gas emissions from consumption, and ease of storage and transportation – make it an especially attractive investment opportunity for those interested in a zero-carbon energy mix. Given the well-documented challenges that utilities and grid operators have faced as they integrate increasingly intermittent renewable resources on the grid, predictable round-the-clock hydrogen power will be an invaluable resource as more grids move towards a truly zero-carbon resource 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 transportation and the electricity sector 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 or carbon capture technology that can produce clean hydrogen at scale.

Our Solutions

We were the first company to successfully commercialize and scale the solid oxide platform. Our platform delivers distributed electricity and hydrogen generation through our stationary fuel cells, our solid oxide electrolyzer and our marine technology.

Distributed electricity production. Our stationary fuel cell solution, the Bloom Energy Server, is designed to deliver reliable, resilient, clean and affordable energy for utilities and organizations alike. Ideally suited for microgrid and primary power applications, 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 high-quality electrical output of our Energy Server can be connected to the customer's main electrical feed, thereby avoiding the transmission and distribution losses associated with a centralized grid system. Each Bloom Energy Server is modular and composed of independent 50-kilowatt power modules. A typical configuration includes multiple power modules in a single Energy Server and can produce up to 300 kilowatts of power in a footprint roughly equivalent to that of a standard parking space. Any number of these Energy Server systems can be clustered together in various configurations to form solutions from hundreds of kilowatts to many tens of megawatts. The Bloom Energy Server can be easily integrated into community environments due to its aesthetically attractive design, compact space requirement, minimal noise profile and lack of criteria air pollutants.

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 hydrogen from electrolysis, using less electricity increases the economics of hydrogen production and helps bolster adoption. The Bloom Electrolyzer is designed to produce green hydrogen from 100 percent renewable power. Using less electricity increases the economics of hydrogen production and helps bolster adoption. The hydrogen produced onsite at a customer’s facility can either be used as a fuel source or stored for consumption at a later point.

Marine Transportation. We have also adapted our fuel cell technology to advance the decarbonization of the marine industry through the design and development of fuel cell powered ships. The marine sector is a significant source of global pollution, as many ships continue to use carbon-rich fuels such as bunker fuel, diesel, and other hydrocarbons. As global infrastructure for hydrogen and other 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 sector long-term flexibility and scalability for improved, future-proof, ship design. Furthermore, noise pollution and mechanical vibrations are substantially reduced when Bloom’s fuel cells 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, like green methanol and bio-ethanol, as the marine fuel market develops.

Our Value Proposition

Our energy platform has three key value propositions: resiliency, sustainability and predictability. We seek to provide a complete, integrated “behind-the-meter” solution including installation, equipment, service, maintenance and, in limited cases, bundled fuel. 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 products achieve this while consuming no water during operation, with optimized land use as a result of our high-power density.

We are focused on product innovation, including the continued reduction of carbon emissions from our products, 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 that we will convert our entire global natural gas fleet to certified low-leak natural gas to reduce the release of harmful methane emissions stemming from upstream gas production. We are also focused on scaling use of renewable natural gas (“RNG”) – which is pipeline quality natural gas derived from biogas produced from decomposing organic waste, generally from landfills, agricultural waste and wastewater treatment facilities – as fuel for our Energy Servers and building capacity within the RNG market to broaden adoption.

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 carbon-dioxide emissions from our Energy Servers than from combustion generation, as no costly and complex separation of other gases like nitrogen is required. Captured carbon-dioxide 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 electrolyzer project has been successfully installed and began producing hydrogen in January 2022.

Finally, we continue to leverage our platform in innovative ways, including collaborating with the Department of Energy's Idaho National Lab to efficiently create clean hydrogen using our electrolyzer and excess nuclear energy; generating green hydrogen by integrating our electrolyzer with Heliogen’s concentrated solar energy system; and working with others to find uses of our products 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 Bloom Energy Server can be configured to eliminate the need for traditional backup power equipment such as diesel generators, batteries and uninterruptible power systems by providing primary power to a facility that seamlessly continues to deliver power even when the grid fails. Our Energy Servers are designed to offer consistent power quality 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 enhanced with microgrid components to deliver higher levels of reliability and grid-independent operation. Customers can optimize their solution for mission-critical level, power quality solutions, such as in a data center application, to more basic 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 Bloom Electrolyzer. 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 Server. Regardless of the starting size of a solution, further scaling can be accomplished after the initial solution deployment, 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. 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 43 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 with diesel back-up, 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 continue to improve 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 $1/125^{th}$ 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 microgrid 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.

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, 2021, we had 287 issued patents and 96 patent applications pending in the United States, and we had an international patent portfolio comprising 147 issued patents and 80 patent applications pending. Our U.S. patents are expected to expire between 2023 and 2040. 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 locations abroad. “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, 2021, we had eight registered trademarks in the United States, 40 registered trademarks in Australia, China, the European Union, India, Japan, Republic of Korea, Taiwan, the United Kingdom and two pending applications in China.

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 76,000 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. The current lease for our 50,000 square-foot principal Sunnyvale manufacturing facility expires in December 2023. We leased a new 89,000 square-foot R&D and manufacturing facility in Fremont, California that became operational in April 2021. Additionally, we leased a new 164,000 square-foot manufacturing facility in Fremont, California that became operational in January 2022.

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.

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 cell systems 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. That 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 opens up and drives demand for certain components that has outpaced the return of the global supply chain to full production. We continued to manage disruptions from an increase in lead times for 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 2022. During 2021, 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 and only one instance of a significant delay in the installation 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 – COVID-19 Pandemic.*

Services

We provide operations and maintenance agreements ("O&M Agreements") for all of our Energy Servers, which are 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 behalf. We currently service and maintain every installed Bloom Server worldwide.

As of December 31, 2021, our in-house service organization had 78 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 preventative maintenance, in terms of filter and adsorbents replacements and on-site part and periodic fuel cell module replacements.

Our two Remote Monitoring and Control Centers ("RMCC") provide 24x7 coverage of every installed Bloom 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 Bloom Energy Server we ship includes instrumentation and a secure telemetry connection that enables either RMCC to monitor over 500 system performance parameters real time. This comprehensive monitoring capability enables the RMCC operators to have a detailed understanding of the internal operation of our power modules. 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 cell modules with the capability to restore it to full power, efficiency and life with a less than three weeks turnaround. This close proximity to our Delaware manufacturing facility enables us to review the condition of returned modules and inform 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 abroad, we sell Energy Servers directly to customers. In the United States, we also enable customers' use of the Energy Servers through a pay as you go offering, 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 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 Server platform 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. 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, or access to new geographic markets. SK ecoplant in the Republic of Korea is a strategic power generation and distribution partner. Together, we have transacted nearly 200 MW of projects totaling more than $1.8 billion of equipment and expected service revenue. In October 2021, we announced an expansion of our existing partnership with SK ecoplant, hat 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 in the United States and the Republic of Korea to advance green hydrogen commercialization, and an equity investment in Bloom Energy in December 2021. Please see Note 18 - *SK ecoplant Strategic Investment* in in Part II, Item 8, *Financial Statements and Supplementary Data.*

Sustainability

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. To produce one megawatt per hour for a year, thermoelectric power generation for the U.S. grid withdraws approximately 156 million gallons of water more than our platform.

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 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 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, and plan to follow up with another aligned report in 2022.

The direct impacts of climate change on energy systems, including the increased risk they pose to energy service disruption, may provide increased 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 Bloom 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 required to obtain applicable permits and approvals from federal, state and local authorities for the installation of Bloom Energy Servers and the Bloom Electrolyzer 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 abroad designed to support and accelerate the adoption of clean and/or reliable distributed power generation and hydrogen technologies such as Bloom Energy Servers and the Bloom Electrolyzer. These policy initiatives 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 ITC under Section 48 of the Internal Revenue Code, available to the owner of our Energy Server for systems purchased and placed into service. The credit is equal to 26 percent of expenditures for capital equipment and installation, and the credit for fuel cells is capped at $1,500 per 0.5 kilowatt of capacity. The credit will remain at 26 percent through 2022 and then step down to 22 percent in 2023. Under current law the credit is set to expire in 2024.

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 tax exemptions, incentives or other customer incentives in many states including California, New Jersey, Connecticut, Massachusetts, Rhode Island, Maryland and New York. These policy provisions are subject to change.

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 product 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 generally 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 product and installation revenue. Many factors can cause a lag between the time a customer signs a purchase order 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 obtaining financing. 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. 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.

See Part II, Item 7, *Management's Discussion & Analysis of Financial Condition and Results of Operations – Purchase and Financing Options – Delivery and Installation*, for additional information on backlog.

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, 2021, we had approximately 1,719 full-time employees worldwide, of which 1,404 were located in the United States, 274 were located in India and 41 were located in other countries. During 2021, our workforce grew by 30% as compared to 2020.

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, supported by strong compensation, benefits and health and wellness programs. We are mission driven, and we hire and develop talent with a passion toward achieving our mission.

Inclusion and Diversity

Our cultural foundation is one of innovation, results, respect and doing the right thing. One of our greatest strengths is the talent of our employees. We believe diverse talent leads to better decision making and that creating an inclusive environment 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, tracking our progress and holding 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 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 stats are strong, our culture of inclusivity is stronger (as of December 31, 2021):

- 60% of our employee population globally is ethnically diverse
- Women make up 21% of our employee population globally
- Our senior leadership team consists of four ethnically diverse individuals and three women
- Women make up 20% of our leadership population (Director and above)

Talent Development

We recently 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 provide employees with the resources required to achieve their goals and engage in meaningful feedback discussions with their manager leading to development, exposure to new experiences, and real-time learnings.

We provide a series of global employee learning sessions to support our employees' ability to effectively engage with their manager. 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.

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 recently added access to financial planning and education for all levels of the organization. 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, learnings and the pride of giving back. Our Connected Employee Series offers cross-functional learnings to all employees and our Employee Community Series introduces influential community leaders to our increasing role in the broader community and world.

We have actively played an impactful role in the community. In support of frontline hospital and healthcare workers, we launched our Inaugural Bloom Energy "Stars & Strides" community run/walk fundraiser where employees and families were encouraged to participate, and co-sponsoring mobile vaccinations in underserved communities. Employees are encouraged to participate in local volunteer activities.

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 and again in 2021, 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, while implementing additional safety measures for the 40% 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.

Community Investment in 2021

The health and well-being of our people, communities and planet are paramount. Early in the COVID-19 pandemic, we were deemed an essential business. In collaboration with the University of Illinois and El Camino Health, we launched the University of Illinois' Shield T3 COVID testing system and hosted a mobile laboratory at our facility in Sunnyvale. We have been powering and hosting the mobile lab to provide rapid testing for Bay Area organizations and schools.

Throughout the COVID-19 pandemic, our Energy Servers have been delivering power to facilities around the globe that are providing essential services. We have deployed more than 20,000 fuel cell modules since our first commercial shipments in 2009, sending power to hospitals, healthcare manufacturing facilities, biotechnology facilities, grocery stores, hardware stores, banks, telecom facilities and other critical infrastructure applications.

Our employees are mission-driven and passionately invest their time in support of our local communities. Our inaugural Bloom Energy Stars and Strides charity race in San Jose helped raise money for the Valley Medical Center Foundation in August 2021. In addition, our employees have helped tackle food insecurity by boxing 9,000 pounds of produce to feed 360 families in the Bay Area, mentored University of Delaware students to help them complete their senior design program, and organized holiday toy drives with Toys for Tots.

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, 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 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, our ability to become profitable may be impaired.
- We rely on interconnection requirements and net metering arrangements that 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 ability to develop new products and enter into new markets could be negatively impacted if we are unable to identify partners to assist in such development or expansion, and 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 business has been and continues to be adversely affected by the COVID-19 pandemic.
- Our future success depends in part on our ability to increase our production capacity, and we may not be able to do so in a cost-effective manner.
- If our Energy Servers contain manufacturing defects, our business and financial results could be harmed.
- The performance of our Energy Servers 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, 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 Energy Servers 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 reputation.
- We have, in some instances, entered into long-term supply agreements that could result in insufficient inventory 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 Energy Servers on time will suffer.
- Possible new trade tariffs could have a material adverse effect on our business.
- Any significant disruption in the operations at our headquarters or manufacturing facilities could delay the production of our Energy Servers, which would harm our business and results of operations.

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 rely on tax equity financing arrangements to realize the benefits provided by ITCs and accelerated tax depreciation and in the event these programs are terminated, our financial results could be harmed.

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 Energy Servers.
- The installation and operation of our Energy Servers are subject to environmental laws and regulations in various jurisdictions, and there is uncertainty with respect to the interpretation of certain environmental laws and regulations to our Energy Servers, especially as these regulations evolve over time.
- 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.

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 grow our business over the long-term.
- 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.
- We may not be able to generate sufficient cash to meet our debt service obligations.

Risks Related to Our Operations

- We may have conflicts of interest with our PPA Entities.
- 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 and 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.

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.

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, 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 industry, and we cannot be sure that potential customers will accept distributed generation broadly, or our Energy Server products specifically. Enterprises may be unwilling to adopt our solution over traditional or competing power sources for any number of reasons, including the perception that our technology or our company is unproven, lack of confidence in our business model, the perceived unavailability of back-up service providers to operate and maintain the Energy Servers, and lack of awareness of our product or their perception of regulatory or political headwinds. Because distributed generation is an emerging industry, broad acceptance of our products and services is subject to a high level of uncertainty and risk. 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 typically depends on a number of factors, including the potential customer’s budget and decision as to the type of financing it chooses to use, as well as the arrangement of such financing. Prospective customers often undertake a significant evaluation process that may further extend the sales cycle. 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 between 10% and 20% 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 installation and acceptance, 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, 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, including fuel cells for the hydrogen market. 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 transactions, which require financing, require that we make certain assumptions regarding the cost of financing capital. Actual financing costs may vary from our estimates due to factors outside of our control, including changes in customer creditworthiness, macroeconomic factors, the returns offered by other investment opportunities available to our financing partners, and other factors. If the cost of financing ultimately exceeds our estimates, 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 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 curtailment of availability (e.g., as a consequence of physical limitations or adverse regulatory conditions for the delivery of production of natural gas) or the inability to obtain natural gas service could make our Energy Servers less economically attractive to potential customers and reduce demand.

If we are not able to continue to reduce our cost structure in the future, our ability to become profitable may be impaired.

We must continue to reduce the manufacturing costs for our Energy Servers to expand our market. 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 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 electricity 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 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.

We rely on interconnection requirements and export tariff arrangements that are 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 is generally provided for in the United States under federal, state or local laws and regulations. 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 currently expires in 2023. We cannot predict the outcome of regulatory proceedings addressing tariffs that would include customers utilizing fuel cells. If there is not an economical tariff for customers utilizing fuel cells 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. 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 products that operate with hydrogen.

We currently face and will continue to face significant competition.

We compete for customers, financing partners and incentive dollars with other electric power providers. Many providers of electricity, 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. 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, 2021, two customers accounted for approximately 43% and 11% of our total revenue. The loss of any large customer order or any delays in installations of new Energy Servers with any large customer would materially and adversely affect our business results.

Our ability to develop new products and enter into new markets could be negatively impacted if we are unable to identify partners to assist in such development or expansion, and our products may not be successful if we are unable to maintain alignment with evolving industry standards and requirements.

We continue to develop new products for new markets and, as we move into those markets, we may need to identify new business partners and suppliers in order to facilitate such development and expansion, such as our entry into the hydrogen market or the development of the Bloom Electrolyzer. 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 for the partnership. 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, limiting our ability to expand our business and harming our financial condition and results of operations.

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

Risks Related to Our Products and Manufacturing

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. The precautions that we have implemented in our operations may not be sufficient to prevent exposure to COVID-19. While we do maintain protocols to minimize the risk of COVID-19 transmission within our facilities, including enhanced cleaning, masking if required by the local authorities as well as providing testing for all employees, 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.

During the COVID-19 pandemic, we have experienced delays from certain vendors and suppliers, which, in turn, could cause delays in the manufacturing and installation of our Energy Servers 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 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 Energy Servers 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 Energy Servers 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 Energy Servers will 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.

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.

Our future success depends in part on our ability to increase our production capacity, and we may not be able to do so in a cost-effective manner.

To the extent we are successful in growing our business, we may need to increase our production capacity. 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, and delays in the delivery of manufacturing equipment and subsystems that we manufacture or obtain from suppliers.
- 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 Energy Servers 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 Energy Servers contain manufacturing defects, our business and financial results could be harmed.

Our Energy Servers are complex products and they may contain undetected or latent errors or defects. In the past, we have experienced latent defects only discovered once the Energy Server is 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 product introductions or design changes made for the purpose of cost reduction, performance improvement, fulfilling new customer requirements or improved reliability could introduce new design defects that may impact Energy Server performance and life. Any design or manufacturing defects or other failures of our Energy Servers 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.

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

The performance of our Energy Servers 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 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 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 30 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 their components, 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, especially for new product introductions, 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 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, 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 generally do not recognize revenue on the sales of our Energy Servers until installation and acceptance except where a third party is responsible for installation (such as in our sales in the Republic of Korea and certain cases in the United States), our financial results depend to a large extent on the timeliness of the installation of our Energy Servers. Furthermore, in some cases, the installation of our Energy Servers 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 Energy Servers 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 Energy Servers 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 Energy Servers 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 union 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 Energy Servers 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 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 for our Energy Servers, including certain rare earth materials and other materials that may be of limited supply. If our suppliers provide insufficient inventory at the level of quality required to meet our standards and customer demand 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 Energy Servers or our Energy Servers may be available only at a higher cost or after a long delay.

Recently, 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 has also contributed to and exacerbated this strain. There can be no assurance that the impacts of the pandemic on the supply chain will not continue, or worsen, in the future. Significant delays and shortages could prevent us from delivering our Energy Servers 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 in the past to develop 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 Energy Servers or increase their costs or service costs of our existing portfolio of Energy Servers under O&M Agreements. If we cannot obtain substitute materials or components on a timely basis or on acceptable terms, we could be prevented from delivering our Energy Servers to our customers within required time frames, which could result in sales and installation delays, cancellations, penalty payments, or damage to our 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 reputation.

We have, in some instances, entered into long-term supply agreements that could result in insufficient inventory 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 did not need or that was 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 Energy Servers 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.

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 Energy Servers, 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 Energy Servers, which would harm our business and results of operations.

We manufacture our Energy Servers 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 or catastrophic weather, including extreme weather events or flooding resulting from the effects of climate change, or geologic events. For example, 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. The insurance we maintain against fires, earthquakes and other natural disasters may not be adequate to cover our losses in any particular case.

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.

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. In addition, some countries outside the United States also provide incentives to current and future end users and purchasers of our Energy Servers. We currently have operations and sell our products in Japan, India and the Republic of Korea (collectively, our "Asia Pacific region"), where in some locations such as the Republic of Korea, Renewables Portfolio Standard ("RP Standards") or Clean Energy Standards ("CE Standards") are in place to promote the adoption of renewable, low- or zero-carbon power generation, including, in some circumstances, fuel cells. 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 and/or RP Standards or 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. 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 the Asia Pacific region. Financiers and Equity Investors may also take advantage of these financial incentives, lowering the cost of capital and energy to our customers. However, 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.

For example, the Korean RP Standards are scheduled to be replaced in 2022 with the Hydrogen Portfolio Standard (“HPS”). This may impact the demand for our Energy Servers in the Republic of Korea. Initially, we do not expect the HPS to require 100% hydrogen as a feedstock for fuel cell projects. The Ministry of Trade, Industry, and Economy is running a stakeholder process, which will determine the specifics of the HPS incentive mechanism. For the years ended December 31, 2021 and 2020, our revenue in the Republic of Korea accounted for 38% and 34% 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.

As another example, in the United States, 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. While legislation under active consideration would extend the ITC for up to five years, under current law the ITC will end on December 31, 2023.

The ITC program has operational criteria that extend for five years. If the energy property is disposed 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 in incentives. In the case of a Portfolio Financing, the owner of the portfolio bears the risk of repayment if the assets placed in service do not meet the ITC operational criteria in the future.

As another 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. We are working through the appropriate regulatory channels to establish alternative tariffs for California customers utilizing fuel cells. 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.

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. The continuation of these programs and incentives depends upon political support which to date has been bipartisan and durable.

We rely on tax equity financing arrangements to realize the benefits provided by ITCs and accelerated tax depreciation and in the event these programs are terminated, our financial results could be harmed.

We expect that Energy Server deployments through certain of our financed transactions will receive capital from Equity Investors who derive a significant portion of their economic returns through tax benefits. 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, until the Equity Investors achieve their respective agreed rates of return. 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 the continued availability of tax benefits applicable to our Energy Servers. In addition, conditions in the general economy and financial and credit markets may result in the contraction of available tax equity financing. If we are unable to enter into tax equity financing agreements with attractive pricing terms, or at all, we may not be able to obtain the capital needed to fund our financing programs or use the tax benefits provided by the ITC and MACRS depreciation, which could make it more difficult for customers to finance the purchase of our Energy Servers. Such circumstances could also require us to reduce the price at which we are able to sell our Energy Servers 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 Energy Servers or future products.

The construction, installation, and operation of our Energy Servers or future 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 and climate protection, 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 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 Energy Servers 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 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 Energy Servers 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. Additionally, 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.

The installation and operation of our Energy Servers are subject to environmental laws and regulations in various jurisdictions, and there is uncertainty with respect to the interpretation of certain environmental laws and regulations to our Energy Servers, especially as these regulations evolve over time.

We are committed to compliance with applicable environmental laws and regulations including health and safety standards, and we continuously review the operation of our Energy Servers 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 such as the Comprehensive Environmental Response, Compensation and Liability Act in the United States 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 Energy Servers have high sustainability standards, and any environmental non-compliance by us could harm our 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 Energy Servers or future 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 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.

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 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 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. 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.

In addition, 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, 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, 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. 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 Energy Servers or future 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 use flammable fuels and may operate at 480 volts. High-voltage electricity poses potential shock hazards, and natural gas and hydrogen are flammable gases and therefore a potentially dangerous fuel. Although our Energy Servers are certified to meet ANSI, IEEE, ASME, and NFPA design and safety standards, if our equipment is not properly handled in accordance with our servicing and handling standards and protocols, there could be a system failure and resulting liability. 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 Energy Servers or future 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 Electrolyzer are new types of product in a nascent market, we have in the past needed and may in the future need to seek the 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 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, 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 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 disclosed in an unauthorized manner to third parties, our owned or licensed intellectual property rights could be challenged, invalidated, circumvented, infringed, or misappropriated or our intellectual property rights may not be sufficient to provide us with a competitive advantage, any of which could have a material adverse effect on our business, financial condition, or operating results. In addition, the laws of some countries do not protect proprietary rights as fully as do the laws of the United States. As a result, we may not be able to protect our proprietary rights adequately abroad.

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 and by seeking licenses or injunctions. Several of the proprietary components used in our Energy Servers have been subjected to infringement challenges in the past. We also 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 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, 2021, we had an accumulated deficit of $3.3 billion. We expect to continue to expand our operations, including by investing in manufacturing, sales and marketing, research and development, staffing systems, and infrastructure to support our growth, as well as internationally. 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:

- growing our sales volume;
- increasing sales to existing customers and attracting new customers;
- expanding into new geographical markets and industry market sectors;
- attracting and retaining financing partners who are willing to provide financing for sales on a timely basis and with attractive terms;
- continuing to improve the useful life of our fuel cell technology and reducing our warranty servicing costs;
- reducing the cost of producing our Energy Servers;
- improving the efficiency and predictability of our installation process;
- introducing new products, including products for the hydrogen market;
- improving the effectiveness of our sales and marketing activities; and
- attracting and retaining key talent in a competitive 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 Energy Servers 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, or local permitting requirements, utility requirements, environmental, health, and safety requirements, weather, 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 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 Energy Server installations;
- fluctuations in our service costs, particularly due to unexpected costs of servicing and maintaining Energy Servers;
- 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;
- the timing of the development of the market for hydrogen fuel cell products, including our Bloom 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 need additional manufacturing capacity and we and some of our suppliers may need additional and 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 Energy Servers 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 to grow our business over the long-term.

Currently, we are the only provider able to fully support and maintain our Energy Servers. 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 their Energy Servers 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 Energy Servers 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 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.

As of December 31, 2021, we and our subsidiaries had approximately $526.7 million of total consolidated indebtedness, of which an aggregate of $291.8 million represented indebtedness that is recourse to us, all of which is classified as non-current. Of this $291.8 million in debt, $69.0 million represented debt under our 10.25% Senior Secured Notes due March 2027, and $222.9 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 $234.9 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, 2021, we had $25.8 million in short-term debt and $500.9 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.

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.

Three of our PPA Entities are 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. All of our PPA Entities that operate Energy Servers for end customers have significant restrictions on their 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 PPAs or if Energy Servers are not deployed in accordance with the project's schedule. In three cases, if our PPA Entities experience 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 their PPAs, there could be insufficient cash generated from the project to meet the debt service obligations of the PPA Entity or to meet any targeted rates of return of Equity Investors. If a PPA Entity 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 Entity. To avoid this, we could choose to contribute additional capital to the applicable PPA Entity 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 more recently Dubai, United Arab Emirates to oversee operations in Europe and the Middle East. Managing any international expansion will require additional resources and controls including additional manufacturing and assembly facilities. Any expansion internationally could subject our business to risks associated with international operations, including:

- 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 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;
- 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 customers, and the increased travel, infrastructure, and legal and compliance costs associated with international operations;
- greater difficulties in securing or enforcing our intellectual property rights in certain jurisdictions;
- 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, and public health emergencies, including the COVID-19 pandemic; and

• adverse social, political and economic conditions.

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 outbreak of hostilities in Ukraine could result in increased sanctions that may affect the price of raw materials used in our products, which could have an adverse impact on our operating results.

Our 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.

We may have conflicts of interest with our PPA Entities.

In most of our PPA Entities, we act as the managing member and are responsible for the day-to-day administration of the project. However, we are also a major service provider for each PPA Entity in our capacity as the operator of the Energy Servers under an O&M agreement. Because we are both the administrator and the manager of our PPA Entities, as well as a major service provider, we face a potential conflict of interest in that we may be obligated to enforce contractual rights that a PPA Entity has against us in our capacity as a service provider. By way of example, a PPA Entity may have a right to payment from us under a warranty provided under the applicable operations and maintenance agreement, and we may be financially motivated to avoid or delay this liability by failing to promptly enforce this right on behalf of the PPA Entity. While we do not believe that we had any conflicts of interest with our PPA Entities as of December 31, 2021, conflicts of interest may arise in the future that cannot be foreseen at this time. In the event that prospective future Equity Investors and debt financing partners perceive there to exist any such conflicts, it could harm our ability to procure financing for our PPA Entities in the future, which could have a material adverse effect on our business.

Data security breaches and cyberattacks could compromise our intellectual property or other confidential information and cause significant damage to our business and 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. For example, our Energy Servers are connected to and controlled and monitored by our centralized remote monitoring service, and 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.

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 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 is bound by an employment agreement 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.

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 factors, 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 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;
- 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, 2021, 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.

In addition, 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 stockholder rights plan;
- only the chairman of our board of directors, our chief executive officer, or a majority of our board of directors are authorized 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 of America 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.

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, research and development	Sunnyvale, CA	193,000	Leased	*
Manufacturing, research and development	Mountain View, CA	53,000	Leased	2022
Manufacturing, research and development	Fremont, CA	254,000	Leased	**
Manufacturing	Newark, DE	191,000	Leased	***
Manufacturing[2]	Newark, DE	76,000	Owned	n/a

* Lease terms expire over the period December 2021 through December 2023.

** Lease terms expire in December 2027 and February 2036.

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

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

[2] 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 the United Arab Emirates. To support our growth expectations, we have invested in additional manufacturing capacity at a new facility in Fremont, California. This facility will 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 be 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

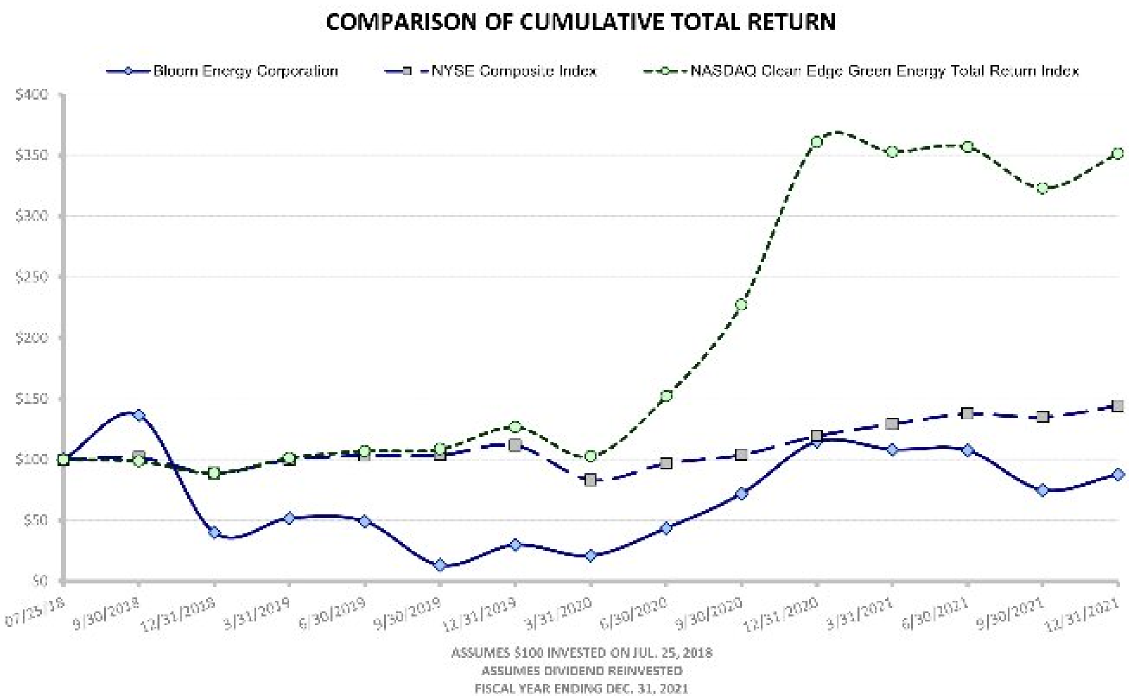
Our Class A common stock is listed on The New York Stock Exchange ("NYSE") under the symbol "BE." There is no public trading market for our Class B common stock. On February 15, 2022, there were 451 registered holders of record of our Class A common stock, 210 registered holders of record of our Class B common stock and one registered holder 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 provided stockholders on 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, 2021.

This graph is not 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.



(in cumulative $)	July 25, 2018	September 30, 2018	December 31, 2018	March 31, 2019	June 30, 2019	September 30, 2019	December 31, 2019	March 31, 2020	June 30, 2020	September 30, 2020	December 31, 2020	March 31, 2021	June 30, 2021	September 30, 2021	December 31, 2021
Bloom Energy Corporation	$100.00	$136.32	$39.92	$51.68	$49.08	$13.00	$29.88	$20.92	$43.52	$71.88	$114.64	$108.20	$107.48	$74.88	$87.72
NYSE Composite Index	$100.00	$101.64	$88.91	$99.90	$103.40	$103.70	$111.59	$83.19	$96.68	$103.84	$119.39	$129.00	$137.52	$134.88	$144.07
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	$360.87	$352.89	$356.75	$323.02	$351.33

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 necessary for the full 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 in order to deliver 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 making renewable fuel production a reality 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 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 the 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 the SPA with SK ecoplant in connection with a strategic partnership. Pursuant to the SPA, on December 29, 2021, we sold to SK ecoplant 10 million shares of zero coupon, non-voting redeemable convertible Series A preferred stock in us, par value $0.0001 per share ("RCPS"), at a purchase price of $25.50 per share for an aggregate purchase price of $255 million (the "Initial Investment").

Simultaneous with the execution of the SPA, we and SK ecoplant executed an amendment to the Joint Venture Agreement ("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 18 - *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*.

COVID-19 Pandemic

General

We continue to monitor and adjust as appropriate our operations in response to the COVID-19 pandemic, including the Omicron variant. As a technology company that supplies resilient, reliable and clean energy, we have been able to conduct the majority of operations as an “essential business” in California and Delaware, where we manufacture and perform many of our

R&D activities, as well as in other states and countries where we are installing or maintaining our Energy Servers. Many of our employees continue to work from home as a result of the spread of the Omicron variant unless they are directly supporting essential manufacturing production operations, installation work, and service and maintenance activities as well as some R&D and general administrative functions. We maintain protocols to minimize the risk of COVID-19 transmission within our facilities, including enhanced cleaning and masking if required by the local authorities, as well as providing testing for all employees. We will continue to follow CDC and local guidelines when notified of possible exposures. 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.*

Liquidity and Capital Resources

COVID-19 created disruptions throughout various aspects of our business as noted herein, and impacted our results of operations in the year ended December 31, 2021. While we improved our liquidity in 2020, we increased our working capital spend in the first half of 2021. We have entered into new leases to maintain sufficient manufacturing facilities to meet anticipated demand in 2022, including new product line expansion. In addition, we also increased our working capital spend and resources to enhance our marketing efforts and to expand into new geographies both domestically and internationally.

We believe we have the sufficient capital to run 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 as described above. In addition, we may still enter the equity or debt market as need 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 W*e 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.

Sales

We did not experience a significant impact on our selling activity related to COVID-19 during the year ended December 31, 2021.

Customer Financing

The ongoing COVID-19 pandemic resulted in a significant drop in the ability of many financiers (particularly financing institutions) to monetize tax credits, primarily the result of a potential drop in taxable income stemming from the pandemic. However, during the last two quarters, we began to see this constraint improving. Our ability to obtain financing for our Energy Servers partly depends on the creditworthiness of our customers, and a few of our customers' credit ratings have fallen during the pandemic, which can impact the financing for their use of an Energy Server. We continue to work on obtaining the financing required for our 2022 installations but if we are unable to secure such financing our revenue, cash flow and liquidity will be materially impacted.

Installations and Maintenance of Energy Servers

Our installation and maintenance operations were impacted by the COVID-19 pandemic in 2021. 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 ended December 31, 2021 and given our mitigation strategies, we only had one instance of a significant delay in the installation of our Energy Servers as a result of supply chain issues that pushed an installation out a quarter.

As to maintenance, if we are delayed in or unable to perform scheduled or unscheduled maintenance, our previously-installed Energy Servers will 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, 2021, we experienced no delays in servicing our Energy Servers due to COVID-19.

Supply Chain

During 2021, we experienced COVID-19 related delays from certain vendors and suppliers, although we were able to mitigate the impact so that we did not experience delays in the manufacture of our Energy Servers and experienced only one significant delay in the installation of our Energy Servers as mentioned above. We have a global supply chain and obtain components from Asia, Europe and India. In many cases, the components we obtain are jointly developed with our suppliers and unique to us, which makes it difficult to obtain and qualify alternative suppliers should our suppliers be impacted by the COVID-19 pandemic or related effects.

During the year ended December 31, 2021, we continued to experience supply chain disruptions due to direct and indirect COVID-19 impacts. There have been a number of disruptions throughout the global supply chain as the global economy opens up and drives demand for certain components that has outpaced the return of the global supply chain to full production. 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. We have put actions in place to mitigate the disruptions by booking alternate sea routes, limiting our use of air shipments, creating virtual hubs and consolidating shipments coming from the same region. During the three months ended December 31, 2021, we continued to manage disruptions from an increase in lead times for most of our components due to a variety of factors, including supply shortages, shipping delays and labor shortages, and we expect this to continue through the first half of 2022. We expect raw material pricing pressures and component shortages especially for semiconductors and specialty metals to persist at least through this time period. In addition, the impact of inflation on the price of components, raw materials and labor may result in increased prices. In the event we are unable to mitigate the impact of delays and/or price increases in raw materials, electronic components and freight, it could delay the manufacturing and installation of our Energy Servers and increase the cost of our Energy Server, which would adversely impact our cash flows and results of operations, including revenue and gross margin.

If spikes in COVID-19 occur in regions in which our supply chain operates, including as a result of the Delta or Omicron variant, we could experience a delay in components and incur further freight price increases, which could in turn impact production and installations and our cash flow and results of operations, including revenue and gross margin.

Manufacturing

Although we have experienced labor shortages due to COVID-19 absences and the relative shortage of labor, overall this has not impacted our production given the safety protocols we have put in place augmented by our ability to increase our shifts and obtain a contingent work force for some of the manufacturing activities. We have incurred additional labor expense due to enhanced safety protocols designed to minimize exposure and risk of COVID-19 transmission as well as increased wages in general. If COVID-19 materially impacts our supply chain or if we experience a significant COVID-19 outbreak that affects our manufacturing workforce, our production could be adversely impacted which could adversely impact our cash flow and results of operation, including revenue.

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 pay as you go offering, 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 Unites States or internationally, the contract structure will include obligations on our part to operate and maintain the Energy Server (“O&M Obligations”). The O&M Obligations 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 Obligations 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 too. 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 the 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 services providers perform the Installation Obligations, as is the case in the Republic of Korea; we contract directly with the customer to provide O&M Obligations.

A customer may 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 completes its purchase from us immediately after commissioning. We both (i) facilitate this financing arrangement between the financial institution and the customer and (ii) provide ongoing operations and maintenance services for the Energy Servers (such arrangement, a “Traditional Lease”).

Customer Financing Options

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”).

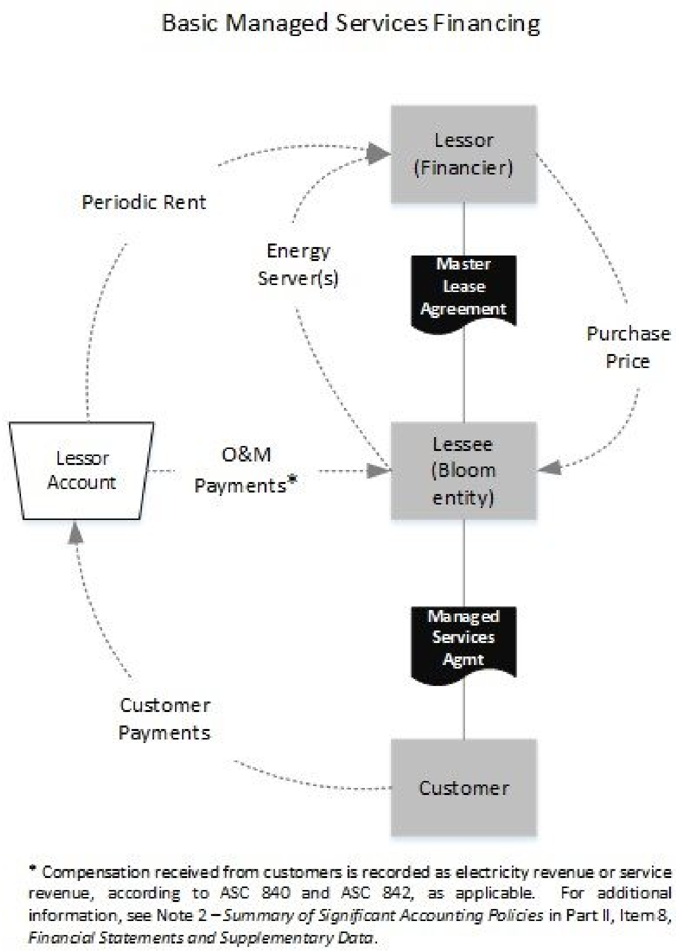
PPAs are typically financed on a portfolio basis. We have financed portfolios through tax equity partnerships, acquisition financings and direct sales to investors (each, a “Portfolio Financing”).

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 a fuel cell, 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 payments to a financing party regardless of the level of performance of the Energy Server.

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



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 rent 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. For such failed sale-and-leaseback transactions, the proceeds from the transaction are 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 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.

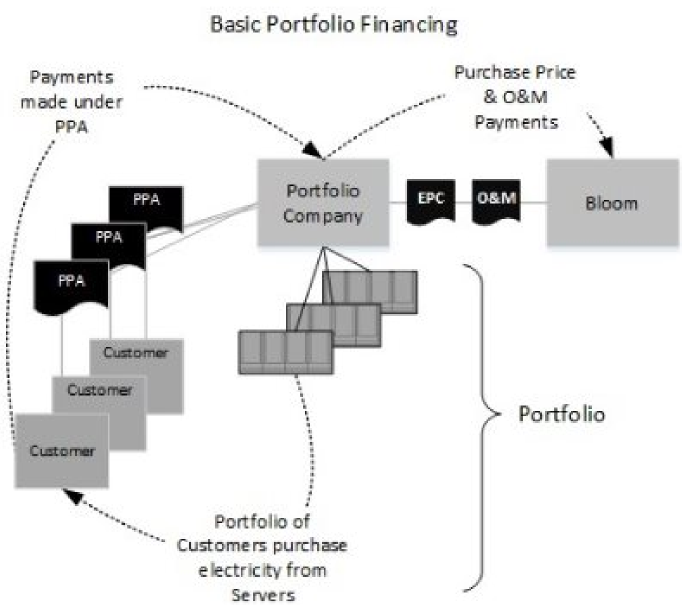
The duration of our current Managed Services Agreement offerings is between five and ten years.

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-hour payment and our pricing assumes revenue at the 95% output level. This means that our revenue may be lower than expected if output is less than 95% and higher if output exceeds 95%. As of December 31, 2021, we had incurred no liabilities due to failure to repair or replace our Energy Servers pursuant to these performance warranties and the fleet of our Energy Servers deployed pursuant to the Managed Services Financings was performing at a lifetime average output of approximately 85%.

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 is the entity that directly owns the portfolio. The Portfolio Company sells the electricity generated by the Energy Servers contemplated by the PPAs to the customers. We recognize revenue as the electricity is produced. Our current practices no longer contemplate these types of transactions.

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 or (ii) sell a Portfolio Company, in each case to an investor or tax equity partnership in which we do not have an equity interest (a “Third-Party PPA”). Like the other Portfolio Financing structure, the investor or tax equity partnership 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 a sale, engineering and procurement and construction agreement (“EPC Agreement”) and an O&M Agreement, with the Portfolio Company. As owner of the portfolio of PPAs and related Energy Servers, the Portfolio Company 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 or delivery of the Energy Server, and upon acceptance of the Energy Server.

Under an O&M Agreement, a one-year service package is provided with the initial sale that includes performance warranties and performance guaranties. After the expiration of the initial standard one-year package, the Portfolio Company has the option to extend our services under the O&M Agreement on an annual basis at a price determined at the time of purchase of our Energy Server. After the standard one-year service package, the Portfolio Company has almost always exercised the option to renew our services under the O&M Agreement.

As of December 31, 2021, we had incurred no liabilities to investors in Portfolio Financings due to failure to repair or replace Energy Servers pursuant to these performance warranties. Our obligation to make payments for underperformance against the performance guaranties was capped at an aggregate total of approximately $114.6 million (including payments both for low output and for low efficiency) and our aggregate remaining potential liability under this cap was approximately $104.4 million.

Obligations to Portfolio Companies

Our Portfolio Financings involve many obligations on our part to the Portfolio Company. 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;
- 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 a Portfolio Company 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 time 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 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 in the event of delays in the manufacture and installation 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 (the "Equity Investors") in the Portfolio Company for liabilities arising out of the portfolio.

We have determined that we are the primary beneficiary in the PPA Entities, subject to reassessments performed as a result of upgrade transactions. Accordingly, we consolidate 100% of the assets, liabilities and operating results of these PPA Entities, 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 entities as noncontrolling interests in subsidiaries 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 redeemable convertible preferred stock, redeemable noncontrolling interest, stockholders' (deficit) equity and noncontrolling interest.

Our consolidated statements of cash flows reflect cash received from the Equity Investors as proceeds from investments by noncontrolling interests in subsidiaries. Our consolidated statements of cash flows also reflect cash paid to these investors as distributions paid to noncontrolling interests in subsidiaries. We reflect any unpaid distributions to these Equity Investors as distributions payable to noncontrolling interests in subsidiaries on our consolidated balance sheets. However, the PPA Entities are separate and distinct legal entities, and Bloom Energy Corporation may not receive cash or other distributions from the PPA Entities 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 the delivery and installations of our products has a significant impact on the timing of the recognition of 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 obtaining financing. 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.

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 for the next three years (on a take or pay basis) for Bloom Energy Servers; (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 18 - *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 majority controlled and managed by us, with the facility, which became operational in July 2020. Other than a nominal initial capital contribution by Bloom Energy, the joint venture will be 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, which increases the scope of the assembly work done in the joint venture facility.

Community Distributed Generation Programs

In July 2015, the state of New York introduced its Community Distributed Generation ("CDG") program, which extends New York's net metering program in order to allow utility customers to receive net metering credits for electricity generated by distributed generation assets located on the utility's grid but not physically connected to the customer's facility. This program allows for the use of multiple generation technologies, including fuel cells. Since then other states have instituted similar programs and we expect that other states may do so as well in the future. In June 2020, the New York Public Service Commission issued an Order that limited the CDG compensation structure for "high capacity factor resources," including fuel cells, in a way that will make the economics for these types of projects more challenging in the future. However, projects already under contract were grandfathered into the program under the previous compensation structure.

We have entered into sales, installation, operations and maintenance agreements with three developers for the deployment of our Energy Servers pursuant to the New York CDG program for a total of 441 systems. As of December 31, 2021, we have recognized revenue associated with 271 systems. We continue to believe that these types of subscriber-based programs could be a source of future revenue and will continue to look to generate sales through these programs in the future.

Comparison of the Years Ended December 31, 2021 and 2020

A discussion regarding our results of operations for 2021 compared to 2020 is presented in this section. A discussion of 2020 to 2019 can be found under Item 7 of Part II of our Annual Report on Form 10-K for the year ended December 31, 2020, which is available free of charge on the SEC's website at www.sec.gov and the Investor section of our website at www.bloomenergy.com.

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.

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, 2021 and 2020 were as follows:

	Years Ended December 31,		**Change**	
	2021	**2020**	**Amount**	**%**
Product accepted during the period (in 100 kilowatt systems)	1,879	1,326	553	41.7 %

Product accepted for the year ended December 31, 2021 compared to the same period in 2020 increased by 553 systems, or 41.7%, as demand increased for our Energy Servers in the Republic of Korea and the utility sector where we accepted 196 systems as part of the CDG program.

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, 2021 and 2020 was as follows:

	Years Ended December 31,	
	2021	**2020**
Direct Purchase (including Third-Party PPAs and International Channels)	96 %	96 %
Managed Services	4 %	4 %
	100 %	100 %

The portion of total revenue attributable to each purchase option in the years ended December 31, 2021 and 2020 was as follows:

	Years Ended December 31,	
	2021	2020
Direct Purchase (including Third-Party PPAs and International Channels)	84 %	88 %
Traditional Lease	1 %	1 %
Managed Services	10 %	5 %
Portfolio Financings	5 %	6 %
	100 %	100 %

Costs Related to Our Products

Total product related costs for the years ended December 31, 2021 and 2020 was as follows:

	Years Ended December 31,		Change	
	2021	2020	Amount	%
Product costs of product accepted in the period	$2,319/kW	$2,368 /kW	$(49)/kW	(2.1)%
Period costs of manufacturing related expenses not included in product costs (in thousands)	$ 22,794	$ 19,573	$ 3,221	16.5 %
Installation costs on product accepted in the period	$561/kW	$900/kW	$(339)/kW	(37.7)%

Product costs of product accepted for the year ended December 31, 2021 compared to the same period in 2020 decreased by approximately $49 per kilowatt driven generally 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. This decrease was partially offset by increases in freight and other supply chain-related pricing pressures.

Period costs of manufacturing related expenses for the year ended December 31, 2021 compared to the same period in 2020 increased by approximately $3.2 million primarily driven by increases in freight charges and other supply chain-related pricing pressures.

Installation costs on product accepted for the year ended December 31, 2021 compared to the same period in 2020 decreased by approximately $339 per kilowatt. For the year ended December 31, 2021, the decrease in install cost was driven by site mix as many of the acceptances did not have installation, either because the installation was done by our distribution channel partner in the Republic of Korea or the final installation associated with a specific customer was scheduled to be completed at a later date although the Energy Servers were delivered and accepted during the period.

Results of Operations

A discussion regarding the comparison of our financial condition and results of operations for the years ended December 31, 2021 and 2020 is presented below.

Revenue

	Years Ended December 31,		Change	
	2021	2020	Amount	%
	(dollars in thousands)			
Product	$ 663,512	$ 518,633	$ 144,879	27.9 %
Installation	96,059	101,887	(5,828)	(5.7)%
Service	144,184	109,633	34,551	31.5 %
Electricity	68,421	64,094	4,327	6.8 %
Total revenue	$ 972,176	$ 794,247	$ 177,929	22.4 %

Total Revenue

Total revenue increased by $177.9 million, or 22.4%, for the year ended December 31, 2021 as compared to the prior year period. This increase was primarily driven by a $144.9 million increase in product revenue and a $34.6 million increase in service revenue partially offset by price reductions to expand our addressable market and $14.2 million of previously deferred revenue related to a specific contract that changed scope and was recognized in the year ended December 31, 2020.

Product Revenue

Product revenue increased by $144.9 million, or 27.9%, for the year ended December 31, 2021 as compared to the prior year period. The product revenue increase was driven primarily by a 41.7% increase in product acceptances as a result of expansion in existing markets and in our CDG program partially offset by price reductions to expand our addressable market and a $14.2 million of previously deferred revenue related to a specific contract that changed scope and was recognized in the year ended December 31, 2020.

Installation Revenue

Installation revenue decreased by $5.8 million, or (5.7)%, for the year ended December 31, 2021 as compared to the prior year period. This decrease in installation revenue was driven by site mix as many of the acceptances did not have installation, either because the installation was done by our distribution channel partner in the Republic of Korea or the final installation associated with a specific customer was scheduled to be completed at a later date although the Energy Servers were delivered and accepted during the period. We expect our installation revenue to continue to decline as percentage of total revenue as we ramp up shipments to SK ecoplant under PDA Restatement.

Service Revenue

Service revenue increased by $34.6 million, or 31.5%, for the year ended December 31, 2021 as compared to the prior year period. This increase was primarily due to the continued growth of our installation base driven by both an increase in new acceptances and renewal of existing service contracts. We expect our service revenue growth at a similar rate as we continue to expand our install base.

Electricity Revenue

Electricity revenue increased by $4.3 million, or 6.8%, for the year ended December 31, 2021 as compared to the prior year period due to the increase in Managed Services Financings.

Cost of Revenue

	Years Ended December 31,		Change	
	2021	2020	Amount	%
	(dollars in thousands)			
Product	$ 471,654	$ 332,724	$ 138,930	41.8 %
Installation	110,214	116,542	(6,328)	(5.4)%
Service	148,286	132,329	15,957	12.1 %
Electricity	44,441	46,859	(2,418)	(5.2)%
Total cost of revenue	$ 774,595	$ 628,454	$ 146,141	23.3 %

Total Cost of Revenue

Total cost of revenue increased by $146.1 million, or 23.3%, for the year ended December 31, 2021 as compared to the prior year period primarily driven by a $138.9 million increase in cost of product revenue, $16.0 million increase in cost of service revenue, increased freight charges and other supply chain-related pricing pressures. This increase was partially offset by a $6.3 million decrease in cost of installation revenue 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.

Cost of Product Revenue

Cost of product revenue increased by $138.9 million, or 41.8%, for the year ended December 31, 2021 as compared to the prior year period. The cost of product revenue increase was driven primarily by a 41.7% increase in product acceptances, increased freight charges and other supply chain-related pricing pressures. 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 $6.3 million, or (5.4)%, for the year ended December 31, 2021 as compared to the prior year period. This decrease, similar to the $5.8 million decrease in installation revenue, was driven by site mix as many of the acceptances did not have installation in the year ended December 31, 2021.

Cost of Service Revenue

Cost of service revenue increased by $16.0 million, or 12.1%, for the year ended December 31, 2021 as compared to the prior year period. This increase was primarily due to the 41.7% increase in acceptances plus the maintenance contract renewals associated with the increase in our fleet of Energy Servers, partially offset by the significant improvements in power module life, cost reductions and our actions to proactively manage fleet optimizations.

Cost of Electricity Revenue

Cost of electricity revenue decreased by $2.4 million, or (5.2)%, for the year ended December 31, 2021 as compared to the prior year period, primarily due to the $1.2 million change in the fair value of the natural gas fixed price forward contract and lower property tax expenses partially offset by the increase in Managed Services Financings.

Gross Profit and Gross Margin

	Years Ended December 31, 2021	Years Ended December 31, 2020	Change
	(dollars in thousands)		
Gross profit:			
Product	$ 191,858	$ 185,909	$ 5,949
Installation	(14,155)	(14,655)	500
Service	(4,102)	(22,696)	18,594
Electricity	23,980	17,235	6,745
Total gross profit	$ 197,581	$ 165,793	$ 31,788
Gross margin:			
Product	29 %	36 %	
Installation	(15) %	(14) %	
Service	(3) %	(21) %	
Electricity	35 %	27 %	
Total gross margin	20 %	21 %	

Total Gross Profit

Gross profit increased by $31.8 million in the year ended December 31, 2021 as compared to the prior year period primarily driven by the 41.7% increase in acceptances 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. This increase was partially offset by price reductions to expand our addressable market and $14.2 million of previously deferred revenue related to a specific contract that changed scope and was recognized in the year ended December 31, 2020 without a corresponding increase in costs, increased freight charges and other supply chain-related pricing pressures.

Product Gross Profit

Product gross profit increased by $5.9 million in the year ended December 31, 2021 as compared to the prior year period. The improvement is driven by a 41.7% increase in product acceptances 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. This increase was partially offset by price reductions to expand our addressable market and $14.2 million of previously deferred revenue related to a specific contract that changed scope and was recognized in the year ended December 30, 2020, increased freight charges and other supply chain-related pricing pressures.

Installation Gross Loss

Installation gross loss decreased by $0.5 million in the year ended December 31, 2021 as compared to the prior year period driven by the site mix, as many of the acceptances did not have installation in the current time period, and other site related factors such as site complexity, size, local ordinance requirements and location of the utility interconnect.

Service Gross Profit (Loss)

Service gross loss improved by $18.6 million in the year ended December 31, 2021 as compared to the prior year period. This was primarily due to the significant improvements in power module life, cost reductions and our actions to proactively manage fleet optimizations.

Electricity Gross Profit

Electricity gross profit increased by $6.7 million in the year ended December 31, 2021 as compared to the prior year period mainly due to the $1.2 million change in the fair value of the natural gas fixed price forward contract and lower property tax expenses.

Operating Expenses

	Years Ended December 31,		Change	
	2021	2020	Amount	%
	(dollars in thousands)			
Research and development	$ 103,396	$ 83,577	$ 19,819	23.7 %
Sales and marketing	86,499	55,916	30,583	54.7 %
General and administrative	122,188	107,085	15,103	14.1 %
Total operating expenses	$ 312,083	$ 246,578	$ 65,505	26.6 %

Total Operating Expenses

Total operating expenses increased by $65.5 million in the year ended December 31, 2021 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 $19.8 million in the year ended December 31, 2021 as compared to the prior year period as we began shifting our investments from sustaining engineering projects for the current Energy Server platform, to continued development of the next generation platform and to support our technology roadmap, including our hydrogen, electrolyzer, carbon capture, marine and biogas solutions.

Sales and Marketing

Sales and marketing expenses increased by $30.6 million in the year ended December 31, 2021 as compared to the prior year period. This increase was primarily driven by the efforts to expand our U.S. and international sales force, as well as increased investment in brand and product management.

General and Administrative

General and administrative expenses increased by $15.1 million in the year ended December 31, 2021 as compared to the prior year period. This increase was primarily driven by increases in outside services and consulting expense, payroll expense and facilities expense to ensure our infrastructure and control environment is ready to scale for growth, partially offset by lower legal expense.

Stock-Based Compensation

	Years Ended December 31,		Change	
	2021	2020	Amount	%
	(dollars in thousands)			
Cost of revenue	$ 13,811	$ 17,475	$ (3,664)	(21.0)%
Research and development	20,274	19,037	1,237	6.5 %
Sales and marketing	17,085	10,997	6,088	55.4 %
General and administrative	24,962	26,384	(1,422)	(5.4)%
Total stock-based compensation	$ 76,132	$ 73,893	$ 2,239	3.0 %

Total stock-based compensation for the year ended December 31, 2021 compared to the prior year period increased by $2.2 million primarily driven by the efforts to expand our U.S. and international sales force, as well as investment to build our brand and product management teams.

Other Income and Expense

	Years Ended December 31,		
	2021	2020	Change
	(in thousands)		
Interest income	$ 262	$ 1,475	$ (1,213)
Interest expense	(69,025)	(76,276)	7,251
Interest expense - related parties	—	(2,513)	2,513
Other income (expense), net	(8,139)	(8,318)	179
Loss on extinguishment of debt	—	(12,878)	12,878
Gain (loss) on revaluation of embedded derivatives	(919)	464	(1,383)
Total	$ (77,821)	$ (98,046)	$ 20,225

Interest Income

Interest income is derived from investment earnings on our cash balances primarily from money market funds.

Interest income for the year ended December 31, 2021 as compared to the prior year period decreased by $1.2 million primarily due to the decrease in the rates of interest earned on our cash balances.

Interest Expense

Interest expense is from our debt held by third parties. Interest expense for the year ended December 31, 2021 as compared to the prior year period decreased by $7.3 million. This decrease was primarily due to lower interest expense as a result of refinancing our notes at a lower interest rate, and the elimination of the amortization of the debt discount associated with notes that have been converted to equity, partially offset by $0.6 million related to an interest rate swap settlement.

Interest Expense - Related Parties

Interest expense - related parties is from our debt held by related parties. Interest expense - related parties for the year ended December 31, 2021 as compared to the prior year period decreased by $2.5 million due to the conversion of all of our notes held by related parties during 2020.

Other Expense, net

Other expense, net, is primarily derived from investments in joint ventures, plus the impact of foreign currency translation. Other expense, net for the year ended December 31, 2021 as compared to the prior year period decreased by $0.2 million due to a $2.0 million gain recorded on fair value remeasurement of our equity investment in the Bloom Energy Japan joint venture in connection with the acquisition thereof plus the prior year's $3.9 million write-off of our investment in the Bloom Energy Japan joint venture.

Loss on Extinguishment of Debt

Loss on extinguishment of debt for the year ended December 31, 2021 as compared to the prior year period improved by $12.9 million resulting from our debt restructuring and debt extinguishment in the prior year period. There were no comparable debt restructuring activities in the current year's period.

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 for the year ended December 31, 2021 as compared to the prior year period worsened by $1.4 million 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	
	2021	2020	Amount	%
	(dollars in thousands)			
Income tax provision	$ 1,046	$ 256	$ 790	308.6 %

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.

Income tax provision increased for the year ended December 31, 2021 as compared to the prior year period 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	
	2021	2020	Amount	%
	(dollars in thousands)			
Net loss attributable to noncontrolling interests and redeemable noncontrolling interests	$ (28,924)	$ (21,534)	$ (7,390)	(34.3)%

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 and redeemable noncontrolling interests for the year ended December 31, 2021 as compared to the prior year period changed by $7.4 million due to increased losses in our PPA Entities, which are allocated to our noncontrolling interests.

Liquidity and Capital Resources

As of December 31, 2021, we had cash and cash equivalents of $396.0 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.

In October 2021, we entered into a Securities Purchase Agreement with SK ecoplant Co., Ltd. in connection with a strategic partnership. On December 29, 2021, we consummated the transactions related to the First Closing by issuing and selling to SK ecoplant 10,000,000 shares of RCPS, at a purchase price of $25.50 per share or an aggregate purchase price of $255 million. In November 2021, PPA V entered into a $136 million term loan, which replaces the LIBOR + 2.5% Term Loan due December 2021.

As of December 31, 2021, we had $291.8 million of total outstanding recourse debt, $234.9 million of non-recourse debt and $16.8 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 the next 12 months and thereafter for the foreseeable future. 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 or 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 financings 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 and 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 including the impact of COVID-19 on our ongoing and future operations. 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 will affect our results of operations, including revenue and cash flows.

As of December 31, 2021, the current portion of our total debt is $25.8 million, of which $17.5 million is outstanding non-recourse debt. We expect a certain portion of the non-recourse debt would be refinanced by the applicable PPA Entity prior to maturity.

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

	Years Ended December 31,	
	2021	2020
Net cash provided by (used in):		
Operating activities	$ (60,681)	$ (98,796)
Investing activities	(46,696)	(37,913)
Financing activities	306,375	176,031

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,	
	2021	2020
PPA Entities [1]		
Net cash provided by PPA operating activities	$ 3,188	$ 26,039
Net cash provided by (used in) PPA financing activities	3,231	(23,784)

[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 have 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, 2021 as compared to the prior year period was primarily the result of an increase in our net working capital of $18.8 million in the year ended December 31, 2021 due to the timing of revenue transactions and corresponding collections and the increase in inventory levels to support future demand.

Investing Activities

Our investing activities have consisted of capital expenditures that include investment to increase our production capacity. We expect to continue such activities as our business grows. Cash used in investing activities of $46.7 million during the year ended December 31, 2021 was primarily the result of expenditures on tenant improvements for a newly leased engineering building in Fremont, California. 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 including to related parties, proceeds and repayments of financing obligations, distributions paid to noncontrolling interests and redeemable noncontrolling interests, and the proceeds from the issuance of our common stock. Net cash provided by financing activities during the year ended December 31, 2021 was $306.4 million, an increase of $130.3 million compared to the prior year period, primarily due to the issuance of RCPS to SK ecoplant in December 2021, combined with proceeds in 2021 from stock option exercises and the sale of shares under our 2018 Employee Stock Purchase Plan.

Off-Balance Sheet Arrangements

We include in our consolidated financial statements all assets and liabilities and results of operations of our PPA Entities that we have entered into and over which we have substantial control. For additional information, see Note 13 - *Portfolio Financings* in Part II, Item 8, *Financial Statements and Supplementary Data.*

We have not entered into any other transactions that have generated relationships with unconsolidated entities or financial partnerships or special purpose entities. Accordingly, as of December 31, 2021 and 2020 we had no off-balance sheet arrangements.

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 Operation*s 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:

Discussion of Earliest Year of Changes in Financial Condition and Results of Operations

We include discussion of the earliest year of changes in financial condition and results of operations, as deemed appropriate, even when such information has been previously disclosed in our prior EDGAR filings. We consider the total mix of available information, including the impact of any recastable events when determining whether to omit discussion of the earliest year and the most appropriate form of presentation. We determine to limit the discussion to the information that has changed or has been determined to be significant to our operations or financial condition.

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.

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 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 start up and commissioning, or when the system is shipped and delivered and is turned on and producing power.

We recognize installation revenue when the system has been installed and is running at full power.

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 Escalator Protection Plan Agreements ("EPP")

We have entered into agreements with certain customers which require us to recognize a liability in compliance with the financial accounting and reporting requirements of ASC Topic 820, *Fair Value Measurement* ("ASC 820"). We use third party valuation experts to provide us with the initial Level 3 fair value measurement that estimates the fair value of the subject liabilities using inputs of forecasted avoided costs and the cost of electricity. We determine our final estimate of liability based on internal reviews and in consideration of the estimates received. Although measured each reporting period, our estimates may vary from the actual payments made under the contractual agreements, as the estimates include current known liability and estimates of potential future payments. We use valuation methodology including using a Monte Carlo simulation model, with estimated inputs of beginning value, growth rate and volatility, and further discount our estimate of liability based on our cost of debt commensurate with the payment period.

Valuation of Certain Financial Instruments and Customer Financing Receivables

We have entered into certain Customer Financing Receivables with our PPA 3a arrangement, and debt financings that include Redeemable Senior Secured Notes, Convertible Senior Notes, Senior Secured Notes, Term Loans and Fixed Rate Notes. We are 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 Topic 840, *Leases*, and ASC Topic 815, *Derivatives and Hedging* ("ASC 815"). We use third party valuation experts to provide us with the initial Level 3 fair value measurement that estimates the fair value of the subject assets or liabilities using inputs of principal to be received or paid, maturity dates, coupon rates, selected discount rate based on implied rating and comparable yield curves in Energy and Non-Financial markets. We determine 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 is 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.

Valuation of Assets and Liabilities of the SK ecoplant Strategic Investment

We have entered into an agreement with SK ecoplant that provides the opportunity, but does not require, an additional investment in common stock Class A, 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.

We are 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 use third party valuation experts that are recognized as financial instrument accounting specialists to provide us with the initial Level 3 fair value measurement that estimates the fair value of the subject assets or liabilities using inputs of 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 determine 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 is 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 determine 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 18 - *SK ecoplant Strategic Investment*.

Incremental Borrowing Rate ("IBR") by Lease Class

We adopted ASC 842 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 finance 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 initial direct costs and prepaid lease payments less lease incentives. 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 each of our PPA Entities that are variable interest entities ("VIEs"). This approach focuses on determining whether we have the power to direct those activities that 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 Entities. 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 those PPA Entities.

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 Entities.

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 would have an adverse impact on our interest income or potentially incur other expenses if a negative interest rate environment was 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 this 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 income statement and in investment fair values assuming a 1% decline in yield. Based on the investment positions in both December 31, 2021 and 2020, a hypothetical 1% decrease in interest rates across all maturities would result in $5.8 million and $4.1 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 had 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.

Commodity Price Risk

We are subject to commodity price risk arising from price movements for natural gas that we supply to 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 is recorded within cost of revenue in the 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.

To provide a meaningful assessment of the commodity price risk arising from price movements in the commodity futures contracts for natural gas, we performed a sensitivity analysis to determine the impact a change in natural gas commodity pricing would have on our consolidated statements of operations assuming a 10% change in the commodity contracts held. Based on monthly commodity positions for the years ended December 31, 2021 and 2020, a hypothetical 10% increase in the price of natural gas futures would have resulted in no change and a $0.3 million adjustment to their balance sheet fair values, respectively.

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 internationally domiciled 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, 2021 and 2020, 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, 2021 and 2020 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

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, 2021 and 2020, the related consolidated statements of operations, comprehensive loss, redeemable convertible preferred stock, redeemable noncontrolling interest, stockholders' equity (deficit) and noncontrolling interest, and cash flows, for each of the two years in the period ended December 31, 2021, 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, 2021 and 2020, and the results of its operations and its cash flows for each of the two years in the period ended December 31, 2021, 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, 2021, 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 25, 2022, 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 Matters

The critical audit matters communicated below are matters arising from the current-period audit of the financial statements that were 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 matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Managed Services Sale and Leaseback Revenue – Refer to Notes 2 and 9 to the financial statements

Critical Audit Matter Description

During the year ended December 31, 2021, the Company completed several sale and leaseback transactions to sell Energy Servers to financiers and lease them back. The Company recognizes revenue for such transactions when control of the Energy Servers transfers to the financier and the leaseback qualifies as an operating lease in accordance with ASC 842 - Leases (“ASC 842”). Revenue is recognized based on the fair value of the Energy Servers, which is allocated to product revenue and installation revenue based on the relative standalone selling prices. Any proceeds to finance the Company’s ongoing costs to operate the Energy Servers during the term of the leaseback are recognized as financing obligations.

The Company recognized $35.1 million of product revenue and $20.9 million of installation revenue for the year ended December 31, 2021 and $10 million of financing obligations from such sale and leaseback transactions.

We identified accounting for revenue recognition under sale and leaseback transactions as a critical audit matter because of the complexity in applying the accounting framework. This required a high degree of auditor judgment and an increased extent of effort when performing audit procedures to evaluate the appropriateness of the accounting framework and to audit the revenue recognized during the year.

How the Critical Audit Matter Was Addressed in the Audit

Our audit procedures related to the accounting for revenue recognition for sale and leaseback transactions included the following:

- We tested the effectiveness of internal controls over the Company's accounting for sale and leaseback transactions, including those over management's evaluation of revenue recognition and the existence and completeness of financing obligations.
- For each sale and leaseback transaction executed during the year ended December 31, 2021, we performed the following:
- We inspected the executed contracts to identify the relevant terms and conditions which would impact the Company's accounting conclusions, including (i) the transfer of control of the Energy Servers to the financier, (ii) the classification of the leaseback as an operating lease in accordance with ASC 842, and (iii) the existence of financing obligations.
- With the assistance of our revenue and lease accounting specialists, we evaluated the Company's conclusions regarding the accounting treatment applied to the sale and leaseback transactions, including the recognition of revenue and the identification of financing obligations.

Securities Purchase Agreement – Refer to Note 18 to the financial statements

Critical Audit Matter Description

On October 23, 2021, the Company entered into a Securities Purchase Agreement with SK ecoplant Co., Ltd. ("SK ecoplant"), to sell 10,000,000 shares of Redeemable Convertible Series A preferred stock (the "RCPS") for a purchase price of $255 million. The agreement included an option for SK ecoplant to purchase additional shares of the Company's Class A Common stock ("the Option").

We identified the accounting and the valuation of the Securities Purchase Agreement as a critical audit matter because of the complexity in applying the accounting framework and the significant estimates and assumptions made by management in the determination of the fair values of both the RCPS and the Option (collectively, the "Financial Instruments"). This required a high degree of auditor judgment and an increased extent of effort when performing audit procedures to evaluate the appropriateness of the accounting framework and the reasonableness of the fair value estimates and assumptions.

How the Critical Audit Matter Was Addressed in the Audit

Our audit procedures related to the accounting for the Securities Purchase Agreement, including the Company's determination of the fair values of the financial instruments, included the following:

- We tested the effectiveness of controls over the Company's accounting for the Securities Purchase Agreement and over the determination of the fair values of the Financial Instruments.
- With the assistance of our financial instrument accounting specialists, we evaluated the Company's conclusions regarding the accounting treatment applied to the Securities Purchase Agreement.
- With the assistance of our fair value specialists, we evaluated the reasonableness of the following:
  - Valuation methodologies applied to determine the fair values of the Financial Instruments
  - Assumptions used by the Company in the valuation of the Financial Instruments, including the expected timing and the probability of a redemption event for the RCPS, and the expected number of shares to be exercised with the Option
  - Accuracy, completeness, and relevancy of the source information underlying the fair value of the Financial Instruments and the mathematical accuracy of the calculations.
- With the assistance of our fair value specialists, we developed independent estimates and compared them to the fair values of the Financial Instruments determined by management.

/s/ Deloitte & Touche LLP

San Jose, California

February 25, 2022

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

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of Bloom Energy Corporation

Opinion on the Financial Statements

We have audited the consolidated statements of operations, of comprehensive loss, of convertible redeemable preferred stock, redeemable noncontrolling interest, stockholders' equity (deficit) and noncontrolling interest and of cash flows of Bloom Energy Corporation and its subsidiaries (the "Company") for the year ended December 31, 2019, including the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the results of operations and cash flows of the Company for the year ended December 31, 2019 in conformity with accounting principles generally accepted in the United States of America.

Change in Accounting Principle

As discussed in Note 2 to the consolidated financial statements, the Company changed the manner in which it accounts for revenue from contracts with customers in 2019.

Basis for Opinion

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

We conducted our audit of these consolidated financial statements in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud.

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

/s/ PricewaterhouseCoopers LLP

San Jose, California
March 31, 2020

We served as the Company's auditor from 2009 to 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, 2021, 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, 2021, 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, 2021, of the Company and our report dated February 25, 2022, 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 25, 2022

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

	December 31,	
	2021	2020
Assets		
Current assets:		
Cash and cash equivalents[1]	$ 396,035	$ 246,947
Restricted cash[1]	92,540	52,470
Accounts receivable[1]	87,789	96,186
Contract assets	25,201	3,327
Inventories	143,370	142,059
Deferred cost of revenue	25,040	41,469
Customer financing receivable[1]	5,784	5,428
Prepaid expenses and other current assets[1]	30,661	30,718
Total current assets	806,420	618,604
Property, plant and equipment, net[1]	604,106	600,628
Operating lease right-of-use assets	106,660	35,621
Customer financing receivable, non-current[1]	39,484	45,268
Restricted cash, non-current[1]	126,539	117,293
Deferred cost of revenue, non-current	1,289	2,462
Goodwill	1,957	—
Other long-term assets[1]	39,116	34,511
Total assets	$ 1,725,571	$ 1,454,387
Liabilities, Redeemable Convertible Preferred Stock, Redeemable Noncontrolling Interest, Stockholders' (Deficit) Equity and Noncontrolling Interest		
Current liabilities:		
Accounts payable	$ 72,967	$ 58,334
Accrued warranty	11,746	10,263
Accrued expenses and other current liabilities[1]	114,138	112,004
Deferred revenue and customer deposits[1]	89,975	114,286
Operating lease liabilities	13,101	7,899
Financing obligations	14,721	12,745
Recourse debt	8,348	—
Non-recourse debt[1]	17,483	120,846
Total current liabilities	342,479	436,377
Deferred revenue and customer deposits, non-current[1]	90,310	87,463
Operating lease liabilities, non-current	106,187	41,849
Financing obligations, non-current	461,900	459,981
Recourse debt, non-current	283,483	168,008
Non-recourse debt, non-current[1]	217,416	102,045
Other long-term liabilities	16,772	17,268
Total liabilities	1,518,547	1,312,991
Commitments and contingencies (Note 13)		
Redeemable convertible preferred stock, Series A: 10,000,000 shares authorized and 10,000,000 shares and no shares issued and outstanding at December 31, 2021 and December 31, 2020, respectively.	208,551	—
Redeemable noncontrolling interest	300	377
Stockholders' (deficit) equity:		
Common stock: $0.0001 par value; Class A shares - 600,000,000 shares authorized and 160,627,544 shares and 140,094,633 shares issued and outstanding and Class B shares - 600,000,000 shares authorized and 15,832,863 shares and 27,908,093 shares issued and outstanding at December 31, 2021 and December 31, 2020, respectively.	18	17
Additional paid-in capital	3,219,081	3,182,753
Accumulated other comprehensive loss	(350)	(9)
Accumulated deficit	(3,263,075)	(3,103,937)
Total stockholders' (deficit) equity	(44,326)	78,824
Noncontrolling interest	42,499	62,195
Total liabilities, redeemable noncontrolling interest, stockholders' (deficit) equity and noncontrolling interest	$ 1,725,571	$ 1,454,387

[1]We have variable interest entities, which represent a portion of the consolidated balances recorded within these financial statement line items in the consolidated balance sheets (see Note 11 - *Portfolio Financings*).

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,		
	2021	2020	2019
Revenue:			
Product	$ 663,512	$ 518,633	$ 557,336
Installation	96,059	101,887	60,826
Service	144,184	109,633	95,786
Electricity	68,421	64,094	71,229
Total revenue	972,176	794,247	785,177
Cost of revenue:			
Product	471,654	332,724	435,479
Installation	110,214	116,542	76,487
Service	148,286	132,329	100,238
Electricity	44,441	46,859	75,386
Total cost of revenue	774,595	628,454	687,590
Gross profit	197,581	165,793	97,587
Operating expenses:			
Research and development	103,396	83,577	104,168
Sales and marketing	86,499	55,916	73,573
General and administrative	122,188	107,085	152,650
Total operating expenses	312,083	246,578	330,391
Loss from operations	(114,502)	(80,785)	(232,804)
Interest income	262	1,475	5,661
Interest expense	(69,025)	(76,276)	(87,480)
Interest expense - related parties	—	(2,513)	(6,756)
Other income (expense), net	(8,139)	(8,318)	706
Gain (loss) on extinguishment of debt	—	(12,878)	—
(Loss) gain on revaluation of embedded derivatives	(919)	464	(2,160)
Loss before income taxes	(192,323)	(178,831)	(322,833)
Income tax provision	1,046	256	633
Net loss	(193,369)	(179,087)	(323,466)
Less: Net loss attributable to noncontrolling interest and redeemable noncontrolling interest	(28,924)	(21,534)	(19,052)
Net loss attributable to Class A and Class B common stockholders	(164,445)	(157,553)	(304,414)
Less: deemed dividend to noncontrolling interest	—	—	(2,454)
Net loss available to Class A and Class B common stockholders	$ (164,445)	$ (157,553)	$ (306,868)
Net loss per share available to Class A and Class B common stockholders, basic and diluted	$ (0.95)	$ (1.14)	$ (2.67)
Weighted average shares used to compute net loss per share available to Class A and Class B common stockholders, basic and diluted	173,438	138,722	115,118

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,		
	2021	2020	2019
Net loss	$ (193,369)	$ (179,087)	$ (323,466)
Other comprehensive loss, net of taxes:			
Unrealized loss on available-for-sale securities	—	(23)	14
Change in derivative instruments designated and qualifying as cash flow hedges	15,243	(6,896)	(6,085)
Foreign currency translation adjustment	(595)	—	
Other comprehensive (loss) income, net of taxes	14,648	(6,919)	(6,071)
Comprehensive loss	(178,721)	(186,006)	(329,537)
Less: Comprehensive loss attributable to noncontrolling interest and redeemable noncontrolling interest	(13,935)	(28,425)	(24,842)
Comprehensive loss attributable to Class A and Class B stockholders	$ (164,786)	$ (157,581)	$ (304,695)

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

Bloom Energy Corporation

Consolidated Statements of Redeemable Convertible Preferred Stock, Redeemable Noncontrolling Interest, Stockholders' Equity (Deficit) and Noncontrolling Interest

(in thousands, except shares)

	Redeemable Convertible Preferred Stock		Redeemable Noncontrolling Interest	Class A and Class B Common Stock		Additional Paid-In Capital	Accumulated Other Comprehensive Income (Loss)	Accumulated Deficit	Total Stockholders' Equity (Deficit)	Noncontrolling Interest
	Shares	Amount		Shares	Amount					
Balances at December 31, 2018	—	$ —	$ 57,261	109,421,183	$ 11	$ 2,481,352	$ 131	$ (2,624,104)	$ (142,610)	$ 125,110
Cumulative effect upon adoption of new accounting standard	—	—	—	—	—	—	—	(17,996)	(17,996)	—
Buyout of equity investors in PPA IIIb (Note 13)	—	—	—	—	—	(2,454)	169	—	(2,285)	—
Conversion of Notes	—	—	—	616,302	—	6,933	—	—	6,933	—
Issuance of restricted stock awards	—	—	—	8,921,807	1	—	—	—	1	—
ESPP purchase	—	—	—	1,718,433	—	11,183	—	—	11,183	—
Exercise of stock options	—	—	—	358,564	—	1,529	—	—	1,529	—
Stock-based compensation	—	—	—	—	—	188,114	—	—	188,114	—
Unrealized loss on available-for-sale securities	—	—	—	—	—	—	14	—	14	—
Change in effective portion of interest rate swap agreement	—	—	—	—	—	—	(295)	—	(295)	(5,790)
Distributions to noncontrolling interests	—	—	(4,011)	—	—	102		—	102	(5,970)
Mandatory redemption of noncontrolling interests	—	—	(55,684)	—	—	—	—	—	—	—
Cumulative effect of hedge accounting	—	—	—	—	—	—		130	130	(130)
Net income (loss)	—	—	2,877	—	—	—	—	(304,414)	(304,414)	(21,929)
Balances at December 31, 2019	—	—	443	121,036,289	$ 12	2,686,759	19	(2,946,384)	(259,594)	91,291
Conversion of Notes	—	—	—	35,881,250	4	300,848	—	—	300,852	—
Issuance of convertible notes	—	—	—	—	—	126,799	—	—	126,799	—
Adjustment of embedded derivative for debt modification	—	—	—	—	—	(24,071)	—	—	(24,071)	—
Issuance of restricted stock awards	—	—	—	7,806,038	1		—	—	1	—
ESPP purchase	—	—	—	1,937,825	—	8,499	—	—	8,499	—
Exercise of stock options	—	—	—	1,341,324	—	14,988	—	—	14,988	—
Stock-based compensation	—	—	—	—	—	68,931	—	—	68,931	—
Unrealized loss on available-for-sale securities	—	—	—	—	—	—	(23)	—	(23)	—
Change in effective portion of interest rate swap agreement	—	—	—	—	—	—	(5)	—	(5)	(6,891)
Distributions to noncontrolling interests	—	—	(45)	—	—	—	—	—	—	(7,205)
Contribution from noncontrolling interest	—	—	—	—	—	—	—	—	—	6,513
Net loss	—	—	(21)	—	—	—	—	(157,553)	(157,553)	(21,513)

	Redeemable Convertible Preferred Stock		Redeemable Noncontrolling Interest	Class A and Class B Common Stock		Additional Paid-In Capital	Accumulated Other Comprehensive Income (Loss)	Accumulated Deficit	Total Stockholders' Equity (Deficit)	Noncontrolling Interest
	Shares	Amount		Shares	Amount					
Balances at December 31, 2020	—	—	377	168,002,726	17	3,182,753	(9)	(3,103,937)	78,824	62,195
Issuance of redeemable convertible preferred stock (Note 18)	10,000,000	208,551	—	—	—	—	—	—	—	—
Cumulative effect upon adoption of new accounting standard (Note 2)	—	—	—	—	—	(126,799)	—	5,308	(121,491)	—
Issuance of restricted stock awards	—	—	—	3,052,012	—	—	—	—	—	—
ESPP purchase	—	—	—	1,945,305	—	10,045	—	—	10,045	—
Exercise of stock options	—	—	—	3,460,364	1	79,744	—	—	79,745	—
Stock-based compensation	—	—	—	—	—	73,338	—	—	73,338	—
Change in effective portion of interest rate swap agreement	—	—	—	—	—	—	—	—	—	15,243
Distributions to noncontrolling interests	—	—	(49)	—	—	—	—	—	—	(5,789)
Cumulative foreign currency translation adjustment	—	—	—	—	—	—	(341)	(1)	(342)	(254)
Net loss	—	—	(28)	—	—	—	—	(164,445)	(164,445)	(28,896)
Balances at December 31, 2021	10,000,000	$ 208,551	$ 300	176,460,407	$ 18	$ 3,219,081	$ (350)	$ (3,263,075)	$ (44,326)	$ 42,499

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,		
	2021	2020	2019
Cash flows from operating activities:			
Net loss	$ (193,369)	$ (179,087)	$ (323,466)
Adjustments to reconcile net loss to net cash used in operating activities:			
Depreciation and amortization	53,454	52,279	78,584
Non-cash lease expense	9,708	5,328	—
Write-off of property, plant and equipment, net	—	38	3,117
Write-off of customer financing receivable	—	—	11,302
Impairment of equity method investment	—	4,236	—
Write-off of PPA II and PPA IIIb decommissioned assets	—	—	70,543
Debt make-whole expense	—	—	5,934
Revaluation of derivative contracts	17,532	(497)	2,779
Stock-based compensation expense	73,274	73,893	196,291
Gain on long-term REC purchase contract	—	72	53
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	—	11,785	—
Amortization of debt issuance costs and premium, net	3,797	6,455	22,130
Changes in operating assets and liabilities:			
Accounts receivable	8,570	(61,685)	51,952
Contract assets	(21,874)	—	—
Inventories	(885)	(33,004)	18,425
Deferred cost of revenue	17,567	19,910	(21,992)
Customer financing receivable	5,428	5,159	5,520
Prepaid expenses and other current assets	1,520	(3,124)	8,643
Other long-term assets	(2,854)	2,904	3,618
Accounts payable	13,132	(620)	(11,310)
Accrued warranty	1,481	(241)	(6,603)
Accrued expenses and other current liabilities	(2,144)	17,753	6,728
Operating lease right-of-use assets and operating lease liabilities	(12,953)	(2,855)	—
Financing cash flows from finance leases	1,142	—	—
Deferred revenue and customer deposits	(22,677)	(12,972)	37,146
Other long-term liabilities	(4,300)	(4,523)	4,376
Net cash (used in) provided by operating activities	(60,681)	(98,796)	163,770
Cash flows from investing activities:			
Purchase of property, plant and equipment	(49,810)	(37,913)	(51,053)
Net cash acquired from step acquisition	3,114	—	—
Proceeds from maturity of marketable securities	—	—	104,500
Net cash (used in) provided by investing activities	(46,696)	(37,913)	53,447
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	(123,374)	(176,522)	(119,277)
Repayment of debt - related parties	—	(2,105)	(2,200)
Debt make-whole payment	—	—	(5,934)
Debt issuance costs	(1,950)	(13,247)	—
Proceeds from financing obligations	16,849	26,279	72,334
Repayment of financing obligations	(13,642)	(10,756)	(8,954)
Contribution from noncontrolling interest	—	6,513	—
Payments to noncontrolling and redeemable noncontrolling interests	—	—	(56,459)
Distributions to noncontrolling interests and redeemable noncontrolling interests	(5,838)	(7,622)	(12,537)
Proceeds from issuance of common stock	89,790	23,491	12,713
Proceeds from issuance of redeemable convertible preferred stock, net	208,551	—	—
Net cash provided by (used in) financing activities	306,375	176,031	(120,314)
Effect of exchange rate changes on cash, cash equivalent and restricted cash	(594)	—	—
Net (decrease) increase in cash, cash equivalents and restricted cash	198,404	39,322	96,903
Cash, cash equivalents, and restricted cash:			
Beginning of period	416,710	377,388	280,485
End of period	$ 615,114	$ 416,710	$ 377,388

Supplemental disclosure of cash flow information:

Cash paid during the period for interest	$ 68,739	$ 71,651	$ 69,851
Cash paid for amounts included in the measurement of lease liabilities:			
Operating cash flows from operating leases	17,416	2,855	—
Operating cash flows from financing leases	878	61	—
Cash paid during the period for income taxes	576	371	860
Non-cash investing and financing activities:			
Increase in recourse debt, non-current upon adoption of ASU 2020-06, net (Note 2)	$ 121,491	$ —	$ —
Liabilities recorded for property, plant and equipment	6,095	7,175	$ 1,745
Operating lease liabilities arising from obtaining right-of-use assets upon adoption of new lease guidance	—	39,775	—
Recognition of operating lease right-of-use asset during the year-to-date period	82,802	12,829	—
Recognition of financing lease right-of-use asset during the year-to-date period	2,210	385	—
Conversion of 6% and 8% convertible promissory notes into additional paid-in capital to related parties	—	—	6,933
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 distributions to equity investors	—	—	373
Accrued interest for notes	—	1,298	1,812
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.

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.

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 $291.8 million of total outstanding recourse debt as of December 31, 2021, $283.5 million of which is classified as long-term debt. Our recourse debt scheduled repayments will commence 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 zero coupon, non-voting Series A redeemable convertible preferred stock ("RCPS") in Bloom Energy, 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 Class A common stock. For more information about the SPA, please see Note 18 - *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 entered into $136.0 million, 3.04% Senior Secured Notes due June 30, 2031, which replaces the LIBOR + 2.5% Term Loan due December 2021.

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 on our ongoing and future operations.

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.

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.

Correction of Previously Issued Consolidated Financial Statements

In preparation of the condensed consolidated financial statements for the three months ended March 31, 2020, errors in our consolidated statements of comprehensive loss were discovered. In the consolidated statements of comprehensive loss for the year ended December 31, 2019, comprehensive loss as previously reported was understated by $5.8 million. In addition, the reconciliation of comprehensive loss to comprehensive loss attributable to Class A and Class B stockholders was erroneously omitted. Management evaluated the impact of these errors to the previously issued financial statements and concluded the impacts were not material. The consolidated statements of comprehensive loss for the year ended December 31, 2019 has been revised to correct the errors described above.

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 each of our variable interest entities ("VIEs"), which we refer to as a tax equity partnership (each such VIE, also referred to as our power purchase agreement ("PPA") entities ("PPA Entities")). This approach focuses on determining whether we have the power to direct those activities of the PPA Entities 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 Entities. For all periods presented, we have determined that we are the primary beneficiary in all of our operational PPA Entities, as discussed in Note 11 - *Portfolio Financings*. We evaluate our relationships with the PPA Entities 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 the fair value of contingent consideration related to business combinations, and estimates of fair value of preferred stock and equity and non-equity items in relation to the SK ecoplant strategic investment. In addition, because the duration and severity of the COVID-19 pandemic remains uncertain, 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 and long-lived assets are attributable to operations in the United States for all periods presented. Additionally, we sell our Energy Servers in Japan, India and the Republic of Korea (collectively, the "Asia Pacific region"). In the years ended December 31, 2021 and 2020, total revenue in the Asia Pacific region was 38% and 35%, respectively, of our total revenue.

Credit Risk - At December 31, 2021 and 2020, SK ecoplant, accounted for approximately 60% and 56% of accounts receivable, respectively. To date, we have not experienced any credit losses.

Customer Risk - During the year ended December 31, 2021, revenue from two customers, SK ecoplant and RAD Bloom Project Holdco LLC, accounted for approximately 43% and 11% of our total revenue, respectively. In the year ended December 31, 2020, revenue from two customers, SK ecoplant and Duke Energy Corporation, accounted for approximately 34% and 28%, respectively, 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 May 2014, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") No. 2014-09, *Revenue from Contracts with Customers* ("ASU 2014-09"). We adopted ASU 2014-09 and its related amendments (collectively, “ASC 606”) as of January 1, 2019 using the modified retrospective method.

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 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 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 frequently 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 with a maintenance services 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. 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 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 services agreements based on their respective costs or, in the case of maintenance services agreements, the estimated costs to be incurred.

We generally recognize product and installation revenue at the point in time that the customer obtains control of the Energy Server. For certain instances, such as bill-and-hold transactions, 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. 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, international channel providers and traditional lease customers. 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 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. Certain customer arrangements include bill-and-hold terms under which transfer of control criteria have been met, including the passing of title and significant risk and reward of ownership to the customers. Therefore, the customers can direct the use of the bill-and-hold product while we retain physical possession of the product until it is delivered to a customer site at a point in time in the future.

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.

Under ASC 840, *Leases* ("ASC 840"), our Managed Services Agreements with the financiers were classified as capital leases and were accordingly recorded as financing transactions, while the sub-lease arrangements with the end customer were classified as operating leases. We have determined that the financiers are our customers in our Managed Services Agreements. In these Managed Services Financings, we enter into an agreement with a customer for a certain term. In exchange for the use of the Energy Server and its generated electricity, the customer makes a monthly payment. The customer's monthly payment includes a fixed monthly capacity-based payment, and in some cases also includes a performance-based payment based on the performance of the Energy Server. The fixed capacity-based payments made by the customer are applied toward our obligation to pay down the financing obligation with the financier. The performance-based payment is transferred to us as compensation for operations and maintenance services and is recognized as service revenue. We allocate the total payments received based on the relative standalone selling prices to electricity revenue and to service revenue. Electricity revenue relating to PPAs was typically accounted for in accordance with ASC 840, and service revenue in accordance with ASC 606.

We adopted ASC 842, *Leases* ("ASC 842"), with effect from January 1, 2020. Managed Services Financings entered from January 1, 2020 until June 30, 2021, including some of our agreements with financiers are accounted for as financing transactions because the repurchase options in these agreements prevent the transfer of control of the systems to the financier. Additionally, some of our leaseback agreements with financiers are not operating leases and are therefore accounted for as 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, 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 and the cost of gas purchased in connection with our first PPA Entity. The cost of electricity revenue is generally recognized over the term of the Managed Services Agreement or customer's PPA contract. The cost of depreciation of the Energy Servers is reduced by the amortization of any U.S. Treasury Department grant payment in lieu of the energy investment tax credit associated with these systems.

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.

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. We are responsible for the installation, operation and maintenance of the Energy Servers at the customers' sites, including running the Energy Servers during the term of the PPA which ranges from 10 to 15 years. Based on the terms of the PPAs, we may also be obligated to supply fuel for the Energy Servers. The amount billed for the delivery of electricity to customers primarily consists of returns on the amounts financed including interest revenue, service revenue and fuel revenue for certain arrangements.

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 and fuel revenue are 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 $2.3 million, $2.3 million and $2.9 million for the years ended December 31, 2021, 2020 and 2019, respectively, is included in electricity 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, 2021, 2020 and 2019, revenue from electricity sales from these Portfolio Financings with PPA Entities amounted to $28.6 million, $27.7 million and $29.7 million, respectively. During the years ended December 31, 2021, 2020 and 2019, service revenue amounted to $14.6 million, $13.8 million and $14.6 million, respectively.

Incentives and Grants

Tariff Agreement - One of our PPA entities entered into an agreement with Delmarva Power and Light ("Delmarva"), an energy company that supplies electricity and natural gas to its customers, PJM Interconnection ("PJM"), a regional transmission organization, and the State of Delaware under which PPA II provided the energy generated from its Energy Servers to PJM and received a tariff as collected by Delmarva.

Revenue at the tariff rate was recognized as electricity sales and service revenue as it was generated over the term of the arrangement until the final repowering in December 2019. Revenue relating to power generation at the Delmarva sites of $11.3 million for the year ended December 31, 2019 is included in electricity sales in the consolidated statements of operations. Revenue relating to power generation at the Delmarva sites for the year ended December 31, 2019 was $6.8 million and is included in service revenue in the consolidated statements of operations. There was no Delmarva revenue for the years ended December 31, 2021 and 2020.

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 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, 2021 and 2020.

Recapture of federal tax incentives, including the investment tax credit, and Indemnifications

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 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, were by the PPA Entities or tax equity partnerships in which we did not have an equity interest (the tax equity partnership purchaser, an "Investment Company") and, therefore, 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. As part of our upgrade of Energy Servers during 2019, we have agreed to indemnify our customer for up to $108.7 million should benefits expected from anticipated ITC and established tariffs fail to occur. We believe these events to be less than likely to occur and have not established financial reserves.

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, 2021 and 2020.

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 change, 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 stock shareholders, unrealized gain (loss) on available-for-sale securities, change in the effective portion of our interest rate swap agreements and comprehensive (income) 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.

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 natural gas fixed price forward contracts, embedded derivatives in contracts with customers, embedded derivatives in our convertible notes, and the fair valuation of preferred stock, options on the future sale of common stock and certain non-equity items. Derivative liability valuations are performed based on a binomial lattice model and adjusted for illiquidity and/or non-transferability and such adjustments are generally based on available market evidence. Contract embedded derivatives valuations are performed using a Monte Carlo simulation model which considers various potential electricity price curves over the sales contracts 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.

Derivative Financial Instruments - We enter into derivative natural gas fixed price forward contracts to manage our exposure to the fluctuating price of natural gas under certain of our power purchase agreements entered in connection with the PPA Entities (refer to Note 13 - *Portfolio Financings*). In addition, we entered into fixed forward interest rate swap arrangements to convert variable interest rates on debt to a fixed rate and on occasion have committed to certain utility grid price protection guarantees in sales agreements. During the year ended December 31, 2019, we also had derivative financial instruments embedded in our 6% Convertible Notes as a means by which to provide additional incentive to investors and to obtain a lower cost cash-source of funds.

Derivative transactions are governed by procedures covering areas such as authorization, counterparty exposure and hedging practices. Positions are monitored based on changes in the spot price in the commodity market and their impact on the market value of derivatives. Credit risk on derivatives arises from the potential for counterparties to default on their contractual obligations to us. We limit our credit risk by dealing with counterparties that are considered to be of high credit quality. We do not enter into derivative transactions for trading or speculative purposes.

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.

While we hedge certain of our natural gas purchase requirements under our PPAs, we do not classify these natural gas fixed price forward contracts as designated hedges for accounting purposes. Therefore, we record the change in the fair value of our natural gas fixed price forward contracts in cost of revenue on the consolidated statements of operations. The fair value of the natural gas fixed price forward contracts is recorded on the consolidated balance sheets as a component of accrued expenses and other current liabilities and as derivative liabilities. As these forward contracts are considered economic hedges, the changes in the fair value of these forward contracts are classified as operating activities within the statement of cash flows, which is consistent with the classification of the cash flows of the hedged item.

Our interest rate swap arrangements prior to their termination qualified as cash flow hedges for accounting purposes as they effectively converted variable rate obligations into fixed rate obligations. The effective change is recorded in accumulated other comprehensive income (loss) and was recognized as interest expense on settlement. As of January 1, 2019, we adopted ASU 2017-12, *Derivatives and Hedging (Topic 815), Targeted Improvements to Accounting for Hedging Activities* ("ASU 2017-12"). Pursuant to ASU 2017-12, ineffectiveness is no longer required to be measured or disclosed. If a cash flow hedge is discontinued due to changes in the forecasted hedged transactions, hedge accounting is discontinued prospectively and any unrealized gain or loss on the related derivative is recorded in accumulated other comprehensive income (loss) and is reclassified into earnings in the same period during which the hedged forecasted transaction affects earnings. The fair value of the swap arrangement is recorded on the consolidated balance sheets as a component of accrued expenses and other current liabilities and as derivative liabilities. The changes in fair value of swap agreements are classified as operating activities within the statement of cash flows, which is consistent with the classification of the cash flows of the hedged item.

We issued preferred stock with conversion features in a complex transaction that is more fully explained in Note 18 - *SK ecoplant Strategic Investment.*

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 continue to be recognized as cost of revenue when the Energy Servers are 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 will be 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.

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. We did not have any impairment charges in any of the periods presented.

Goodwill - Goodwill is recognized in conjunction with business acquisitions as the excess of the purchase consideration for the business acquisition over the fair value of identifiable assets acquired and liabilities assumed. The fair value of identifiable assets and liabilities, and thus goodwill, is subject to redetermination within a measurement period of up to one year following completion of a business acquisition.

Goodwill is tested for impairment annually or more frequently if circumstances indicate an impairment may have occurred. We acquired the remaining noncontrolling equity interest in our related party Bloom Energy Japan Limited as of July 1, 2021. As of December 31, 2021, we recognized goodwill of $2.0 million in our consolidated balance sheets.

Redeemable Convertible Preferred Stock - We issued RCPS on December 29, 2021 that is 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. For additional information, see Note 18 - *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. 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. Refer to Note 13 - *Portfolio Financings* for more information.

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.

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 Transactions

The functional currencies of most of our foreign subsidiaries are the U.S. dollar since the subsidiaries are considered financially and operationally integrated with their domestic parent. For these subsidiaries, the foreign currency monetary assets and liabilities are remeasured into U.S. dollars at end-of-period exchange rates. Any currency transaction gains and losses are included as a component of other expense in our consolidated statements of operations.

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 this entity 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 this entity, translation adjustments resulting from the process of translating the KRW 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.

Recent Accounting Pronouncements

Other than the adoption of the accounting guidance mentioned below, there have been no other significant changes in our reported financial position or results of operations and cash flows resulting from the adoption of new accounting pronouncements.

Accounting Guidance Implemented in 2021

In August 2020, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") 2020-06, *Debt - Debt with Conversion and Other Options (Subtopic 470-20) and Derivatives and Hedging - Contracts in Entity's Own Equity (Subtopic 815-40)* ("ASU 2020-06"). The new standard simplifies the accounting for convertible instruments by eliminating the conversion option separation model for convertible debt that can be settled in cash and by eliminating the measurement model for beneficial conversion features. The guidance is effective for fiscal years beginning after December 15, 2021, with early adoption permitted as early as fiscal years (including interim periods) beginning after December 15, 2020. Consequently, a convertible debt instrument will be accounted for as a single liability measured at its amortized cost, as long as no other features require bifurcation and recognition as derivatives. There will no longer be a debt discount representing the difference between the carrying value, excluding issuance costs, and the principal of the convertible debt instrument and, as a result, there will no longer be interest expense from the amortization of the debt discount over the term of the convertible debt instrument. The amendments in this update also require the if-converted method to be applied for all convertible instruments when calculating diluted earnings per share.

We elected to early adopt ASU 2020-06 as of January 1, 2021 using the modified retrospective transition method, which resulted in a cumulative-effect adjustment to the opening balance of accumulated deficit on the date of adoption. Prior period consolidated financial statements were not restated upon adoption.

Upon adoption of ASU 2020-06, we combined the previously separated equity component with the liability component of our 2.5% Green Convertible Senior Notes due August 2025. These components are now together classified as recourse 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 will be amortized as interest expense. Accordingly, we recorded a 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.

There is no deferred tax impact related to the adoption of ASU 2020-06 due to our full valuation allowance.

Accounting Guidance Not Yet Adopted

Cessation of LIBOR - In March 2020, the FASB issued ASU 2020-04, *Reference Rate Reform (Topic 848) Facilitation of the Effects of Reference Rate Reform on Financial Reporting*, as amended ("ASU 2020-04"), which provides optional expedients for a limited period of time for accounting for contracts, hedging relationships, and other transactions affected by the London Interbank Offered Rate ("LIBOR") or other reference rate expected to be discontinued. ASU 2020-04 is effective immediately and may be applied prospectively to contract modifications made and hedging relationships entered into or evaluated on or before December 31, 2022. In the fourth quarter of 2021, our LIBOR-based debt was refinanced with fixed rate debt. ASU 2020-04 can be applied through December 31, 2022, and has not affected our consolidated financial statements.

Lessor with Variable Lease Payments - In July 2021, the FASB issued ASU No. 2021-05, *Leases (Topic 842): Lessors - Certain Leases with Variable Lease Payments* ("ASU 2021-05"), which modifies ASC 842 to require lessors to classify leases as operating leases if they have variable lease payments that do not depend on an index or rate and would have selling losses if they were classified as sales-type or direct financing leases. The amendments in ASU 2021-05 are effective for fiscal years beginning after December 15, 2021, and interim periods beginning after December 15, 2022. Early adoption is permitted. We are currently evaluating the impact of the adoption of ASU 2021-05 on our consolidated financial statements.

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 will be effective for fiscal years, including interim periods within those fiscal years, beginning after December 15, 2022. Early adoption is permitted. The adoption impact of ASU 2021-08 will depend on the magnitude of any future acquisitions. The standard will 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, 2021	December 31, 2020
Accounts receivable	$ 87,788	$ 96,186
Contract assets	25,201	3,327
Customer deposits	64,809	66,171
Deferred revenue	115,476	135,578

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, except for the $34.2 million related to the transaction with SK ecoplant, are refundable fees until certain milestones are met.

Contract Assets

	Years Ended December 31, 2021	Years Ended December 31, 2020
Beginning balance	$ 3,327	$ 2,768
Transferred to accounts receivable from contract assets recognized at the beginning of the period	(1,198)	—
Revenue recognized and not billed as of the end of the period	23,072	559
Ending balance	$ 25,201	$ 3,327

Deferred Revenue

Deferred revenue activity, including deferred incentive revenue activity, during the years ended December 31, 2021 and 2020 consisted of the following (in thousands):

	Years Ended December 31,	
	2021	2020
Beginning balance	$ 135,578	$ 175,619
Additions	916,604	652,960
Revenue recognized	(936,706)	(693,001)
Ending balance	$ 115,476	$ 135,578

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. 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 period and we expect to recognize substantially all amounts within a year. During the years ended December 31, 2021 and 2020, we recognized $1.2 million and $14.2 million, respectively, of previously deferred revenue that was not associated with acceptances or service in the year as a result of a modification of a contract with a customer.

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,		
	2021	2020	2019
Revenue from contracts with customers:			
Product revenue	$ 663,512	$ 518,633	$ 557,336
Installation revenue	96,059	101,887	60,826
Services revenue	144,184	109,633	95,786
Electricity revenue	3,103	1,071	10,840
Total revenue from contract with customers	906,858	731,224	724,788
Revenue from contracts accounted for as leases:			
Electricity revenue	65,318	63,023	60,389
Total revenue	$ 972,176	$ 794,247	$ 785,177

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,	
	2021	2020
As Held:		
Cash	$ 318,080	$ 180,808
Money market funds	297,034	235,902
	$ 615,114	$ 416,710
As Reported:		
Cash and cash equivalents	$ 396,035	$ 246,947
Restricted cash	219,079	169,763
	$ 615,114	$ 416,710

Restricted cash consisted of the following (in thousands):

	December 31,	
	2021	2020
Current:		
Restricted cash	$ 89,462	$ 26,706
Restricted cash related to PPA Entities[1]	3,078	25,764
Restricted cash, current	92,540	52,470
Non-current:		
Restricted cash	103,300	286
Restricted cash related to PPA Entities[1]	23,239	117,007
Restricted cash, non-current	126,539	117,293
	$ 219,079	$ 169,763

[1] We have VIEs 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, 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. The restricted cash held in the PPA II and PPA IIIb entities as of December 31, 2020, includes $20.3 million and $0.7 million of current restricted cash, respectively, and $88.4 million and $13.3 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 $116.3 million and $49.3 million of accounts receivable during the years ended December 31, 2021 and 2020, respectively. The costs of factoring such accounts receivable on our consolidated statements of operations for the years ended December 31, 2021 and 2020 were not material.

5. Fair Value

Our accounting policy for the fair value measurement of cash equivalents, the fair value of contingent consideration related to business combinations, natural gas fixed price forward contracts, embedded Escalation Protection Plan ("EPP") derivatives and interest rate swap agreements is described in Note 2 - *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):

	Fair Value Measured at Reporting Date Using			
December 31, 2021	**Level 1**	**Level 2**	**Level 3**	**Total**
Assets				
Cash equivalents:				
Money market funds	$ 297,034	$ —	$ —	$ 297,034
	$ 297,034	$ —	$ —	$ 297,034
Liabilities				
Derivatives:				
Option to acquire a variable number of shares of Class A Common Stock (Note 18)	$ —	$ 13,200	$ —	$ 13,200
Natural gas fixed price forward contracts	—	—	—	—
Embedded EPP derivatives	—	—	6,461	6,461
	$ —	$ 13,200	$ 6,461	$ 19,661

	Fair Value Measured at Reporting Date Using			
December 31, 2020	**Level 1**	**Level 2**	**Level 3**	**Total**
Assets				
Cash equivalents:				
Money market funds	$ 235,902	$ —	$ —	$ 235,902
	$ 235,902	$ —	$ —	$ 235,902
Liabilities				
Derivatives:				
Natural gas fixed price forward contracts	$ —	$ —	$ 2,574	$ 2,574
Embedded EPP derivatives	—	—	5,541	5,541
Interest rate swap agreements	—	15,989	—	15,989
	$ —	$ 15,989	$ 8,115	$ 24,104

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 the Option (as defined in Note 18) to acquire a variable number of shares of Class A Common Stock 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.

Natural Gas Fixed Price Forward Contracts - As of December 31, 2020, 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.

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

	December 31, 2021		December 31, 2020	
	Number of Contracts (MMBTU)[2]	Fair Value	Number of Contracts (MMBTU)[2]	Fair Value
Liabilities[1]:				
Natural gas fixed price forward contracts (not under hedging relationships)	88	$ —	830	$ 2,574

[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, 2021 and 2020, we recognized an unrealized gain of $1.1 million and an unrealized loss of $0.1 million, respectively. We realized gains of $1.5 million and $4.5 million for the years ended December 31, 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, 2021 and 2020, we recorded the fair value of the embedded EPP derivatives and recognized an unrealized loss of $0.9 million and an unrealized gain of $0.6 million, respectively, in (loss) gain on revaluation of embedded derivatives on our consolidated statements of operations.

	Natural Gas Fixed Price Forward Contracts	Embedded EPP Derivative Liability	Total
Liabilities at December 31, 2019	$ 6,968	$ 6,176	$ 13,144
Settlement of natural gas fixed price forward contracts	(4,503)	—	(4,503)
Changes in fair value	109	(635)	(526)
Liabilities at December 31, 2020	2,574	5,541	8,115
Changes in fair value	(2,574)	920	(1,654)
Liabilities at December 31, 2021	$ —	$ 6,461	$ 6,461

The following table presents the unobservable inputs related to the year ended December 31, 2020 Level 3 liabilities:

	As of December 31, 2020					
Commodity Contracts	Derivative Liabilities	Valuation Technique	Unobservable Input	Units	Range	Average
	(in thousands)				($ per Units)	
Natural Gas	$ 2,574	Discounted Cash Flow	Forward basis price	MMBTU	$2.82 - $5.03	$ 3.67

The unobservable inputs used in the fair value measurement of the natural gas commodity contracts consist of inputs that are less observable due in part to lack of available broker quotes, supported by little, if any, market activity at the measurement date or are based on internally developed models. Certain basis prices (i.e., the difference in pricing between two locations) included in the valuation of natural gas contracts were deemed unobservable.

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, 2021 and 2020, using an expected growth rate of 7% over the contracts' life and volatility of 20%. The estimated growth rate and volatility were estimated based on the historical tariff changes for the period 2008 to 2021. 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.

Interest Rate Swap Agreements - Interest rate swap agreements are valued using quoted prices for similar contracts and are therefore classified as Level 2 financial assets. Interest rate swaps are designed as hedging instruments and are recognized at fair value on our consolidated balance sheets. During the fourth quarter of 2021, we terminated our hedges and recognized $10.8 million of interest expense in relation to the terminated hedges in the consolidated statement of operations for the year ended December 31, 2021.

Redeemable Convertible Preferred Stock - RCPS are recorded at fair value upon issuance, net of any issuance costs in accordance with ASC 815-40, *Contracts in Entity's Own Equity.* For additional information see Note 18 - SK ecoplant Strategic Investment.

We revalued the Option to purchase Class A common stock to its fair value as of December 31, 2021, and recorded a loss of $3.6 million which is included in other income (expense), net in our consolidated statements of operations. The fair value of the Option is reflected in Accrued expenses and other current liabilities in our consolidated balance sheet.

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, 2021		December 31, 2020	
	Net Carrying Value	Fair Value	Net Carrying Value	Fair Value
Customer receivables				
Customer financing receivables	$ 45,269	$ 38,334	$ 50,746	$ 42,679
Debt instruments				
Recourse:				
10.25% Senior Secured Notes due March 2027	68,968	72,573	68,614	71,831
2.5% Green Convertible Senior Notes due August 2025	222,863	356,822	99,394	426,229
Non-recourse:				
7.5% Term Loan due September 2028	29,006	35,669	31,746	37,658
6.07% Senior Secured Notes due March 2030	73,262	83,251	77,007	89,654
3.04% Senior Secured Notes due June 2031	132,631	137,983	—	—
LIBOR + 2.5% Term Loan due December 2021	—	—	114,138	116,113
Redeemable convertible preferred stock, Series A	$ 208,551	$ 208,551	$ —	$ —

6. Balance Sheet Components

Inventories

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

	December 31, 2021	December 31, 2020
Raw materials	$ 80,809	$ 79,090
Work-in-progress	31,893	29,063
Finished goods	30,668	33,906
	$ 143,370	$ 142,059

The inventory reserves were $13.9 million and $14.0 million as of December 31, 2021 and 2020, respectively.

Prepaid Expenses and Other Current Assets

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

	December 31, 2021	December 31, 2020
Prepaid hardware and software maintenance	$ 3,494	$ 5,227
Receivables from employees	5,463	5,160
Other prepaid expenses and other current assets	21,704	20,331
	$ 30,661	$ 30,718

Property, Plant and Equipment, Net

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

	December 31, 2021	December 31, 2020
Energy Servers	$ 674,799	$ 669,422
Computers, software and hardware	21,276	20,432
Machinery and equipment	110,600	106,644
Furniture and fixtures	8,607	8,455
Leasehold improvements	52,936	37,497
Building	48,934	46,730
Construction-in-progress	43,544	21,118
	960,696	910,298
Less: accumulated depreciation	(356,590)	(309,670)
	$ 604,106	$ 600,628

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

Property, plant and equipment under operating leases by the PPA Entities was $368.0 million and $368.0 million and accumulated depreciation for these assets was $139.4 million and $115.9 million as of December 31, 2021 and 2020, respectively. Depreciation expense for these assets was $23.5 million and $23.8 million for the years ended December 31, 2021 and 2020, respectively.

Other Long-Term Assets

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

	December 31, 2021	December 31, 2020
Prepaid insurance	$ 9,534	$ 11,792
Deferred commissions	7,569	6,732
Long-term lease receivable	7,953	6,995
Prepaid and other long-term assets	14,060	8,992
	$ 39,116	$ 34,511

Accrued Warranty

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

	December 31, 2021	December 31, 2020
Product warranty	$ 961	$ 1,549
Product performance	10,785	8,605
Maintenance services contracts	—	109
	$ 11,746	$ 10,263

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

Balances at December 31, 2019	$ 9,881
Accrued warranty, net	5,944
Warranty expenditures during the year	(5,671)
Balances at December 31, 2020	10,154
Accrued warranty, net	11,049
Warranty expenditures during the year-to-date period	(9,457)
Balances at December 31, 2021	$ 11,746

Accrued Expenses and Other Current Liabilities

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

	December 31,	
	2021	2020
Compensation and benefits	$ 38,222	$ 28,343
Current portion of derivative liabilities	6,059	19,116
Sales-related liabilities	6,040	14,479
Accrued installation	13,968	16,468
Sales tax liabilities	1,491	2,732
Interest payable	2,159	2,224
Other	46,198	28,642
	$ 114,138	$ 112,004

Other Long-Term Liabilities

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

	December 31,	
	2021	2020
Delaware grant	$ 9,495	$ 9,212
Other	7,277	8,056
	$ 16,772	$ 17,268

We recorded a long-term liability for the potential future repayment of the incentive grant received from the Delaware Economic Development Authority of $9.5 million and $9.2 million as of December 31, 2021 and December 31, 2020, respectively. See Note 13 - *Commitments and Contingencies* for a full description of the grant.

7. Outstanding Loans and Security Agreements

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				

The following is a summary of our debt as of December 31, 2020 (in thousands, except percentage data):

	Unpaid Principal Balance	Net Carrying Value			Unused Borrowing Capacity	Interest Rate	Maturity Dates	Entity	Recourse
		Current	Long-Term	Total					
10.25% Senior Secured Notes due March 2027	$ 70,000	$ —	$ 68,614	$ 68,614	$ —	10.25%	March 2027	Company	Yes
2.5% Green Convertible Senior Notes due August 2025	230,000	—	99,394	99,394	—	2.5%	August 2025	Company	Yes
Total recourse debt	300,000	—	168,008	168,008	—				
7.5% Term Loan due September 2028	34,456	2,826	28,920	31,746	—	7.5%	September 2028	PPA IIIa	No
6.07% Senior Secured Notes due March 2030	77,837	3,882	73,125	77,007	—	6.07%	March 2030	PPA IV	No
LIBOR + 2.5% Term Loan due December 2021	114,761	114,138	—	114,138	—	LIBOR plus margin	December 2021	PPA V	No
Letters of Credit due December 2021	—	—	—	—	968	2.25%	December 2021	PPA V	No
Total non-recourse debt	227,054	120,846	102,045	222,891	968				
Total debt	$ 527,054	$ 120,846	$ 270,053	$ 390,899	$ 968				

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, 2021 and December 31, 2020.

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 ("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 be issued on or prior to September 27, 2021. We chose not to exercise this accordion feature, which has now 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. On or after 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. Before March 27, 2022, we may redeem the 10.25% Senior Secured Notes upon repayment of a make-whole premium. 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 $61.7 million as of December 31, 2021. The current balance of the outstanding unpaid principal of the 10.25% Senior Secured Notes was $8.3 million as of December 31, 2021.

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 are $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 not met during the three months ended September 30, 2021 and accordingly, the noteholders may not convert their Green Notes at any time during the quarter ending December 31, 2021. 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 year ended December 31, 2021 was $7.7 million, including amortization of issuance costs of $2.0 million. Interest expense for the year ended December 31, 2020 was $2.9 million, including amortization of issuance costs of $0.8 million.

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 as of December 31, 2021, 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 - In December 2012 and later amended in August 2013, PPA IIIa entered into a $46.8 million credit agreement to fund the purchase and installation of our Energy Servers. The loan bears a fixed interest rate of 7.5% payable quarterly. The loan requires quarterly principal payments, which began in March 2014. The credit agreement requires us to maintain a debt service reserve for all funded systems, the balance of which was $3.6 million and $3.8 million as of December 31, 2021 and 2020, 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 IIIa.

6.07% Senior Secured Notes due March 2030 - The notes bear a fixed interest rate of 6.07% per annum payable quarterly, which began in December 2015 and ends in March 2030. The note purchase agreement requires us to maintain a debt service reserve, the balance of which was $9.1 million and $8.5 million as of December 31, 2021 and 2020, respectively, which was included as part of long-term restricted cash in the consolidated balance sheets. The notes are secured by all the assets of the PPA IV.

LIBOR + 2.5% Term Loan due December 2021 - In June 2015, PPA V entered into a $131.2 million term loan due December 2021. The loan was secured by all the assets of the PPA V and required quarterly principal payments which began in March 2017. In accordance with the credit agreement, PPA V was issued floating rate debt based on LIBOR plus a margin, paid quarterly. The applicable margins used for calculating interest expense are 2.25% for years 1-3 following the Term Conversion Date and 2.5% thereafter. For the lenders' commitments to the loan and the commitments to a letter of credit facility, the PPA V also paid commitment fees at 0.5% per annum over the outstanding commitments, paid quarterly. In connection with the floating-rate credit agreement, in July 2015, PPA V entered into pay-fixed, receive-float interest rate swap agreements to convert its floating-rate loan into a fixed-rate loan. The agreement also included commitments to a letter of credit facility with the aggregate principal amount of $6.4 million, later adjusted down to $6.2 million. In November 2021, PPA V issued 3.04% Senior Secured Notes due June 2031 in an aggregate principal amount of $136.0 million due June 2031, the proceeds of which were primarily utilized to pay all obligations under the LIBOR + 2.5% Term Loan due December 2021.

Repayment Schedule and Interest Expense

The following table presents details of our outstanding loan principal repayment schedule as of December 31, 2021 (in thousands):

2022	$ 25,831
2023	32,430
2024	36,369
2025	270,613
2026	44,870
Thereafter	129,556
	$ 539,669

Interest expense of $69.0 million and $78.8 million for the years ended December 31, 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 year ended December 31, 2021.

8. Derivative Financial Instruments

Option to acquire a variable number of shares of Class A Common Stock (Note 18)

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, and recorded a loss of $3.6 million which is included in other income (expense), net in our consolidated statements of operations. The fair value of the Option is reflected in accrued expenses and other current liabilities in our consolidated balance sheet. For additional information, see Note 18 - *SK ecoplant Strategic Investment.*

Interest Rate Swaps

We use various financial instruments to minimize the impact of variable market conditions on our results of operations. We use interest rate swaps to minimize the impact of fluctuations of interest rate changes on our outstanding debt where LIBOR is applied. We do not enter into derivative contracts for trading or speculative purposes.

The fair values of the derivatives designated as cash flow hedges as of December 31, 2021 and December 31, 2020 on our consolidated balance sheets are as follows (in thousands):

	December 31,	
	2021	**2020**
Liabilities		
Accrued expenses and other current liabilities	$ —	$ 15,989

PPA V - In July 2015, PPA V entered into nine interest rate swap agreements to convert a variable interest rate debt to a fixed rate and we designated and documented the interest rate swap arrangements as cash flow hedges. Three of these swaps matured in 2016, three were to mature on December 31, 2021 and the remaining three were to mature on June 30, 2031. The effective change is recorded in accumulated other comprehensive loss and is recognized as interest expense on settlement. The notional amounts of the swaps are none and $181.4 million as of December 31, 2021 and December 31, 2020, respectively. During 2021, the variable rate debts were refinanced into fixed rate debt and there was no notational amount as the swaps were settled.

We measured the swaps at fair value on a recurring basis. Fair value is determined by discounting future cash flows using LIBOR rates with appropriate adjustment for credit risk. We realized immaterial gains attributable to the change in valuation during the years ended December 31, 2021 and 2020, and these gains are included in other expense, net, in the consolidated statements of operations. Upon settlement of the interest rate swaps in November 2021, we paid $11.5 million in breakage fees to terminate the interest rate swap contracts, and we recognized interest expense of $10.9 million on interest rate swaps settlements in our consolidated statements of operations.

The changes in fair value of the derivative contracts designated as cash flow hedges and the amounts recognized in accumulated other comprehensive loss and in earnings are as follows (in thousands):

	Years Ended December 31,	
	2021	**2020**
Beginning balance	$ 15,989	$ 9,238
Loss (gain) recognized in other comprehensive loss	(2,714)	8,465
Amounts reclassified from other comprehensive loss to earnings	(12,529)	(1,569)
Net loss (gain) recognized in other comprehensive loss	(15,243)	6,896
Gain recognized in earnings	(746)	(145)
Ending balance	$ —	$ 15,989

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, 2021 and 2020, we recorded the fair value of the embedded EPP derivatives and recognized an unrealized loss of $0.9 million and an unrealized gain of $0.6 million, respectively. These gains and losses are included within loss on revaluation of embedded derivatives in the consolidated statements of operations. The fair value of these derivatives was $6.5 million and $5.5 million as of December 31, 2021 and 2020, 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 and in March 2021, we signed leases in Fremont, California that will expire in 2027 and 2036, respectively, to replace our manufacturing facilities in Sunnyvale and Mountain View, California. These existing plants in California together comprise approximately 581,000 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, Taiwan and the United Arab Emirates.

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, 2021 and 2020, rent expense for all occupied facilities was $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 initial direct costs and prepaid lease payments less lease incentives. 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, 2021 and 2020 were as follows (in thousands):

	December 31,	
	2021	2020
Assets:		
Operating lease right-of-use assets, net [1, 2]	$ 106,660	$ 35,621
Financing lease right-of-use assets, net [2, 3, 4]	2,944	334
Total	$ 109,604	$ 35,955
Liabilities:		
Current:		
Operating lease liabilities	$ 13,101	$ 7,899
Financing lease liabilities [5]	863	74
Total current lease liabilities	13,964	7,973
Non-current:		
Operating lease liabilities	106,187	41,849
Financing lease liabilities [6]	2,157	267
Total non-current lease liabilities	108,344	42,116
Total lease liabilities	$ 122,308	$ 50,089

[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, net of accumulated amortization.

[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, 2021 and 2020 were as follows (in thousands):

	Years Ended December 31,	
	2021	2020
Operating lease costs	$ 15,850	$ 9,804
Financing lease costs:		
Amortization of financing lease right-of-use assets	1,345	51
Interest expense for financing lease liabilities	349	16
Total financing lease costs	1,694	67
Short-term lease costs	407	613
Total lease costs	$ 17,951	$ 10,484

Weighted average remaining lease terms and discount rates for our facilities, Energy Servers and vehicles as of December 31, 2021 and 2020 were as follows:

	December 31,	
	2021	2020
Remaining lease term (years):		
Operating leases	8.9 years	6.7 years
Finance leases	3.5 years	4.2 years
Discount rate:		
Operating leases	9.6 %	8.7 %
Finance leases	7.6 %	7.0 %

Future lease payments under lease agreements for our facilities, Energy Servers and vehicles as of December 31, 2021 were as follows (in thousands):

	Operating Leases	Finance Leases
2022	$ 13,153	$ 948
2023	14,994	944
2024	13,500	771
2025	13,524	301
2026	13,061	83
Thereafter	61,636	—
Total minimum lease payments	129,868	3,047
Less: amounts representing interest or imputed interest	(10,581)	(26)
Present value of lease liabilities	$ 119,287	$ 3,021

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, 2021 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 liability. These financing obligations are included in each agreements' 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 recorded right-of-use assets and lease liabilities and recorded lease expense over the lease term. The recognized lease expense has been immaterial.

We recognized $35.1 million of product revenue, $20.9 million of installation revenue, $10.0 million of financing obligations, and $29.4 million of right-of-use assets and lease liabilities from such successful sale and leaseback transactions for the year ended December 31, 2021.

At December 31, 2021, future lease payments under the Managed Services Agreements financing obligations and the sublease payments from the customers under the related operating leases were as follows (in thousands):

	Financing Obligations
2022	$ 45,117
2023	44,173
2024	42,100
2025	41,075
2026	36,477
Thereafter	55,780
Total lease payments	264,722
Less: imputed interest	(149,240)
Total lease obligations	115,482
Less: current obligations	(14,721)
Long-term lease obligations	$ 100,761

The long-term financing obligations, as reflected in our consolidated balance sheets, were $461.9 million and $460.0 million as of December 31, 2021 and 2020, 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	2020
Lease payment receivables, net[1]	$ 44,378	$ 49,806
Estimated residual value of leased assets (unguaranteed)	890	890
Net investment in sales-type leases	45,268	50,696
Less: current portion	(5,784)	(5,428)
Non-current portion of net investment in sales-type leases	$ 39,484	$ 45,268

[1] Net of current estimated credit losses of approximately $0.1 million as of December 31, 2021 and December 31, 2020.

As of December 31, 2021, the future scheduled customer payments from sales-type leases were as follows (in thousands):

	Future minimum lease payments
2022	$ 6,110
2023	6,435
2024	6,797
2025	7,125
2026	7,491
Thereafter	11,690
Total undiscounted cash flows	45,648
Less: imputed interest	(1,219)
Present value of lease payments[1]	$ 44,429

[1] Amount comprises a current and long-term portion of lease receivables of $5.8 million and $39.5 million, respectively, after giving effect to a $0.1 million current expected credit loss reserve on the long-term portion, which is reflected as a component of the net investment in sales-type leases presented in our consolidated statement of financial position as customer financing receivables.

Future estimated operating lease payments we expect to receive from Portfolio Financing arrangements through PPA Entities as of December 31, 2021, were as follows (in thousands):

	Operating Leases
2022	44,205
2023	45,290
2024	46,533
2025	47,553
2026	48,732
Thereafter	215,286
Total lease payments	$ 447,599

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.

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, 2021, options to purchase 48,777 shares of Class B common stock were outstanding with a weighted average exercise price of $30.29 per share. The 2002 Stock Plan has been canceled but continues to govern outstanding option grants under the 2002 Plan.

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 years 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, 2021, stock options to purchase 6,891,128 shares of Class B common stock were outstanding with a weighted average exercise price of $27.52 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 a 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, 2021, stock options to purchase 3,797,391 shares of Class A common stock were outstanding with a weighted average exercise price of $9.70 per share and 8,367,663 shares of outstanding RSUs that may be settled for Class A common stock which were granted pursuant to the 2018 Plan. As of December 31, 2021, we had 23,999,768 shares reserved for issuance under the 2018 Plan.

Stock-Based Compensation Expense

We used the following weighted-average assumptions in applying the Black-Scholes valuation model for determination of option valuation:

	Years Ended December 31,		
	2021	**2020**	**2019**
Risk-free interest rate	—	0.6%	1.7% - 2.6%
Expected term (years)	—	6.6	6.4 - 6.7
Expected dividend yield	—	—	—
Expected volatility	—	71.0%	45.7% - 50.2%

The following table summarizes the components of stock-based compensation expense in the consolidated statements of operations (in thousands):

	Years Ended December 31,		
	2021	2020	2019
Cost of revenue	$ 13,811	$ 17,475	$ 45,429
Research and development	20,274	19,037	40,949
Sales and marketing	17,085	10,997	32,478
General and administrative	24,962	26,384	77,435
	$ 76,132	$ 73,893	$ 196,291

As of December 31, 2021, 2020 and 2019, we capitalized $5.8 million, $5.9 million and $7.3 million of stock-based compensation cost, respectively, into inventory and property, plant and equipment.

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, 2019	17,837,316	$ 20.76	6.9	$ 14,964
Granted	200,000	7.30		
Exercised	(1,341,324)	11.18		
Cancelled	(1,341,721)	22.49		
Balances at December 31, 2020	15,354,271	21.27	6.0	129,855
Exercised	(3,460,364)	23.05		
Cancelled	(1,156,612)	16.33		
Balances at December 31, 2021	10,737,295	21.23	5.2	60,304
Vested and expected to vest at December 31, 2021	10,620,061	21.36	5.2	58,772
Exercisable at December 31, 2021	8,858,957	23.67	4.8	36,441

Stock Options - During the years ended December 31, 2021 and 2020, we recognized $15.6 million and $19.1 million of stock-based compensation costs for stock options, respectively.

We did not grant options in the year ended December 31, 2021 and we granted 200,000 options of Class A common stock during the year ended December 31, 2020, and the weighted average grant-date fair value of those granted awards was $7.30 per share.

During the years ended December 31, 2021, 2020 and 2019, the intrinsic value of stock options exercised was $28.9 million, $11.2 million and $2.6 million, respectively.

As of December 31, 2021 and 2020, we had unrecognized compensation costs related to unvested stock options of $6.2 million and $20.7 million, respectively. This cost is expected to be recognized over the remaining weighted-average period of 0.9 years and 1.8 years, respectively. Cash received from stock options exercised totaled $79.7 million and $15.0 million for the years ended December 31, 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, 2019	10,112,266	$ 17.29
Granted	4,744,467	12.43
Vested	(7,806,038)	17.48
Forfeited	(631,907)	14.93
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

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, 2021 and 2020, we recognized $50.1 million and $44.1 million of stock-based compensation costs for stock awards, respectively.

As of December 31, 2021 and 2020, we had $114.9 million and $59.8 million of unrecognized stock-based compensation cost related to unvested stock awards, expected to be recognized over a weighted average period of 2.3 years and 2.2 years, respectively.

Executive Awards

In November 2019, the Board approved stock options ("2019 Executive Awards") to certain executive staff. The 2019 Executive Awards were granted pursuant to the 2018 Plan and consist of three vesting tranches with a vesting schedule based on the attainment of market conditions and assuming continued employment and service through each vesting date. Stock-based compensation costs associated with the 2019 Executive Awards are recognized over the service period, even though no tranches of the 2019 Performance Awards vest unless a market condition is achieved. The grant date fair value of the options is determined using a Monte Carlo simulation.

In June 2020, the Board approved stock awards ("2020 Executive Awards") to certain executive staff. The 2020 Executive Awards were PSUs granted pursuant to the 2018 Plan and consist of three vesting tranches with an annual vesting schedule based on the attainment of performance conditions and assuming continued employment and service through each vesting date. Stock-based compensation costs associated with the 2020 Executive Awards is recognized over the service period as we evaluate the probability of the achievement of the performance conditions.

In June 2021, the Board approved stock awards ("2021 Executive Awards") to certain executive staff. The 2021 Executive Awards were PSUs granted pursuant to the 2018 Plan and consist of three vesting tranches with an annual vesting schedule 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 is recognized over the service period as we evaluate the probability of the achievement of the performance conditions.

In May 2021, we issued RSUs and PSUs to our Chief Executive Officer. 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, 2021, the unamortized compensation expense for the RSUs and PSUs was $24.0 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.

The following table presents the stock activity and the total number of shares available for grant under our stock plans as of December 31, 2021:

	Plan Shares Available for Grant
Balances at December 31, 2020	20,233,754
Added to plan	8,102,014
Granted	(6,475,536)
Cancelled	2,778,276
Expired	(491,724)
Balances at December 31, 2021	24,146,784

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, 2021 and 2020, we recognized $7.7 million and $5.7 million of stock-based compensation costs for the 2018 ESPP, respectively. We issued 1,945,305 shares in the year ended December 31, 2021. During the year ended December 31, 2021, we added an additional 1,902,572 shares and there were 2,544,668 shares available for issuance as of December 31, 2021.

As of December 31, 2021, we had $9.8 million of unrecognized stock-based compensation costs, expected to be recognized over a weighted average period of 0.5 years.

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,	
	2021	2020
Risk-free interest rate	0.1% - 2.8%	0.12%- 1.51%
Expected term (years)	0.5 - 2.0	0.5 - 2.0
Expected dividend yield	—	—
Expected volatility	95.0% - 114.5%	61.0% - 119.2%

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 "Equity Investors") contribute funds into a limited liability investment entity ("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. In 2016, we purchased the tax equity investor’s interest in PPA I, which resulted in a change in our ownership interest in PPA I while we continued to hold the controlling financial interest in this company. In 2019, we bought out the then-existing tax equity investors' interest in the PPA II Investment Company, and admitted two new equity investors as a member of the PPA II Operating Company, retaining only a minor equity interest in the Operating Company. One of the new equity investors became the managing member, and as a result we determined that we no longer retained a controlling interest in the Operating Company in PPA II and therefore, the Operating Company was no longer consolidated as a VIE into our consolidated financial statements. In 2019, we also entered into a PPA IIIb upgrade of Energy Servers transaction where we bought out the equity interest of the third-party investor, decommissioned the Energy Servers in the Operating Company and sold new Energy Servers deployed at customer sites through our Managed Services Financing option. The PPA IIIb Investment Company and Operating Company became wholly-owned by us but no longer met the definition of a VIE. We therefore continue to consolidate PPA IIIb in our consolidated financial statements.

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, 2021 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	
Income (loss) and tax benefits allocation to Equity Investor	99%		90%		99%	
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 [1]	US Bank		Exelon Corporation		Exelon Corporation	
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, 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
Activity as of December 31, 2019:						
Distributions to Equity Investor	$	4,803	$	6,692	$	70,591
Debt repayment—principal	$	6,631	$	18,012	$	9,453

[1] Investor name represents ultimate parent of subsidiary financing the project.

[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.

The noncontrolling interests in PPA IIIa are redeemable as a result of the put option held by the Equity Investors as of December 31, 2021 and 2020. At December 31, 2021 and 2020, the carrying value of redeemable noncontrolling interests of $0.3 million and $0.4 million, respectively, exceeded the maximum redemption value.

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 each of the PPA Entities in the PPA IIIa transaction, the PPA IV transaction and the PPA V transaction (in thousands):

	December 31, 2021	December 31, 2020
Assets		
Current assets:		
Cash and cash equivalents	$ 1,541	$ 1,421
Restricted cash	3,078	4,698
Accounts receivable	5,112	4,420
Customer financing receivable	5,784	5,428
Prepaid expenses and other current assets	3,071	3,048
Total current assets	18,586	19,015
Property and equipment, net	228,546	252,020
Customer financing receivable, non-current	39,484	45,268
Restricted cash, non-current	23,239	15,320
Other long-term assets	2,362	37
Total assets	$ 312,217	$ 331,660
Liabilities		
Current liabilities:		
Accrued expenses and other current liabilities	$ 194	$ 19,510
Deferred revenue and customer deposits	662	662
Non-recourse debt	17,483	120,846
Total current liabilities	18,339	141,018
Deferred revenue and customer deposits, non-current	5,410	6,072
Non-recourse debt, non-current	217,417	102,045
Total liabilities	$ 241,166	$ 249,135

We consolidated each PPA Entity as VIEs in the PPA IV transaction and the PPA V transaction, as we remain the minority shareholder in each of these transactions but have determined that we are the primary beneficiary of these VIEs. These PPA Entities contain debt that is non-recourse to us and own 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, 2021 and 2020 (in thousands):

	December 31, 2021			December 31, 2020		
	Bloom Energy	PPA Entities	Consolidated	Bloom Energy	PPA Entities	Consolidated
Assets						
Current assets	$ 787,834	$ 18,586	$ 806,420	$ 599,589	$ 19,015	$ 618,604
Long-term assets	625,520	293,631	919,151	523,138	312,645	835,783
Total assets	$ 1,413,354	$ 312,217	$ 1,725,571	$ 1,122,727	$ 331,660	$ 1,454,387
Liabilities						
Current liabilities	$ 315,792	$ 856	$ 316,648	$ 295,359	$ 20,172	$ 315,531
Current portion of debt	8,348	17,483	25,831	—	120,846	120,846
Long-term liabilities	669,759	5,410	675,169	600,489	6,072	606,561
Long-term portion of debt	283,482	217,417	500,899	168,008	102,045	270,053
Total liabilities	$ 1,277,381	$ 241,166	$ 1,518,547	$ 1,063,856	$ 249,135	$ 1,312,991

12. Related Party Transactions

Our operations include the following related party transactions (in thousands):

	Years Ended December 31,		
	2021	2020	2019
Total revenue from related parties	$ 16,038	$ 7,562	$ 228,100
Interest expense to related parties	—	2,513	6,756

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 additional information, see Note 17 - *Business Combinations*.

For the years ended December 31, 2021 and 2020, we recognized related party total revenue of $1.6 million and $3.4 million, respectively. Accounts receivable from this joint venture was $2.4 million as of December 31, 2020.

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. The joint venture is majority controlled and managed by us and is accounted for as a consolidated subsidiary. For the years ended December 31, 2021 and 2020, we recognized related party revenue of $14.5 million and $4.2 million, respectively. As of December 31, 2021 and 2020, we had outstanding accounts receivable of $4.4 million and none, 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 a Securities Purchase Agreement 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 18 - *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, 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, 2021 and December 31, 2020, we had no material open purchase orders with our component suppliers and third-party manufacturers that are not cancellable.

Portfolio Financings Performance Guarantees - Under the terms of the PPA I transaction, customers agree to purchase power from our Energy Servers at negotiated rates, generally for periods of up to 15 years. We are responsible for all operating costs necessary to maintain, monitor and repair the Energy Servers, including the fuel necessary to operate the systems under certain PPAs. The risk associated with the future market price of fuel purchase obligations is mitigated with commodity contract futures. For additional information, see Note 11 - *Portfolio Financings*.

We guarantee the performance of Energy Servers at certain levels of output and efficiency to its customers over the contractual term. The PPA Entities 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 in cost of service revenue in the consolidated statements of operations. We paid $0.3 million and $7.4 million for the years ended December 31, 2021 and 2020, respectively.

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. 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, 2021, the balance of the long-term restricted cash fund was $6.7 million.

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, 2021, we had 484 full time workers in Delaware and paid $191.4 million in cumulative compensation. As of December 31, 2020, we had 424 full time workers in Delaware and paid $152.2 million in cumulative compensation. 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, 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 July 2018, two former executives of Advanced Equities, Inc., Keith Daubenspeck and Dwight Badger, filed a statement of claim with the American Arbitration Association in Santa Clara, CA, against us, Kleiner Perkins, Caufield & Byers, LLC ("KPCB"), New Enterprise Associates, LLC ("NEA") and affiliated entities of both KPCB and NEA seeking to compel arbitration and alleging a breach of a confidential agreement executed between the parties on June 27, 2014 (the "Confidential Agreement"). On May 7, 2019, KPCB and NEA were dismissed with prejudice. On June 15, 2019, a second amended statement of claim was filed against us alleging securities fraud, fraudulent inducement, a breach of the Confidential Agreement, and violation of the California unfair competition law. On July 16, 2019, we filed our answering statement and affirmative defenses. On September 27, 2019, we filed a motion to dismiss the statement of claim. On March 24, 2020, the Tribunal denied our motion to dismiss in part, and ordered that claimant's relief is limited to rescission of the Confidential Agreement or remedies consistent with rescission, and not expectation damages. On September 14, 2020, the Tribunal issued an interim order dismissing the claimant's remaining claims and requesting further briefing on the issue of prevailing party. On November 10, 2020, the Tribunal issued an order declaring us the prevailing party and requesting a motion for award of attorney's fees. On March 17, 2021, we received the final award for attorneys fees and costs. On March 26, 2021, we filed a petition in the Northern District of California to confirm the award. Messrs. Badger and Daubenspeck have taken the position that the award should be vacated, including on the ground that one of the arbitrators made insufficient disclosures or was biased against them. The Northern District of California rejected the arguments made by Messrs. Badger and Daubenspeck and on September 8, 2021, issued an order granting our petition to confirm the award, and entered judgment in our favor for the attorneys fees and costs awarded by the Tribunal. On October 1, 2021, Mr. Badger and Mr. Daubenspeck filed a notice of appeal with the United States Court of Appeal for the Ninth Circuit.

In June 2019, Messrs. Daubenspeck and Badger filed a complaint against our Chief Executive Officer ("CEO") and our former Chief Financial Officer ("CFO") in the United States District Court for the Northern District of Illinois asserting nearly identical claims as those in the pending arbitration discussed above. The lawsuit was stayed pending the outcome of the arbitration. The stay was lifted on October 20, 2020. On March 19, 2021 we filed a motion to dismiss the case on several grounds. On May 3, 2021, plaintiffs filed a motion to stay the lawsuit pending the outcome of the petition to confirm the arbitration award in the Northern District of California. We believe the complaint to be without merit and that the issues were previously tried and dismissed in the arbitration. We are unable to estimate any range of reasonably possible losses.

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; Rodriquez 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 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 Section 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 a motion 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 have filed a motion asking the court to certify an interlocutory appeal as to the accounting claims. Separately, the claims for violation of Sections 11 and 15 of the Securities Act that were not dismissed by the court are proceeding to discovery. A case schedule has been set, with a trial scheduled for November 2023. We believe the claims to be without merit and we intend to defend this action vigorously. We are unable to predict the outcome of this litigation at this time and accordingly are not able to estimate any range of reasonably possible losses.

In September 2019, we received a books and records demand from purported stockholder Dennis Jacob ("Jacob Demand"). The Jacob Demand cites allegations from the September 17, 2019 report prepared by admitted short seller Hindenburg Research. In November 2019, we received a substantially similar books and records demand from the same law firm on behalf of purported stockholder Michael Bolouri ("Bolouri Demand" and, together with the Jacob Demand, the "Demands"). On January 13, 2020, Messrs. Jacob and Bolouri filed a complaint in the Delaware Court of Chancery to enforce the Demands in the matter styled *Jacob, et al. v. Bloom Energy Corp.*, C.A. No. 2020-0023-JRS. On March 9, 2020, Messrs. Jacob and Bolouri filed an amended complaint in the Delaware Court of Chancery to add allegations regarding the restatement. The court held a one-day trial on December 7, 2020. On February 25, 2021, the Delaware Court of Chancery issued a decision rejecting the Bolouri Demand but granting in part the Jacob Demand allowing limited access to certain books and records pertaining to the allegations made in the Hindenburg Research Report. On March 29, 2021, the Court of Chancery entered a Final Order and Judgment regarding the required production of documents. On April 28, 2021, we produced documents to Mr. Jacob responsive to the Final Order and Judgment. We are unable to estimate any range of reasonably possible losses.

In March 2020, Francisco Sanchez filed a class action complaint in Santa Clara County Superior Court against us alleging certain wage and hour violations under the California Labor Code and Industrial Welfare Commission Wage Orders and that we engaged in unfair business practices under the California Business and Professions Code, and in July 2020 he amended his complaint to add claims under the California Labor Code Private Attorneys General Act ("PAGA"). On November 30, 2020, we filed a motion to compel arbitration and the motion was to be heard on March 5, 2021. On February 24, 2021, Mr. Sanchez dismissed the individual and class action claims without prejudice, leaving one cause of action for enforcement of the Private Attorney Generals Act. In April 2021, an amended complaint reflecting these changes was filed with the Santa Clara Superior Court. The parties attended a mediation on January 10, 2022, and agreed to resolve the PAGA and individual claims for an amount under $1.0 million. The parties are preparing an agreement, which, once executed, will be presented to the court for approval in compliance with PAGA.

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, 2021, the City of Santa Clara filed a Motion for Demurrer. which will be heard on April 21, 2021. 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 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 arising under a Supply Agreement between Plansee/GTP and Bloom Energy Corporation including infringement of several claims of U.S. Patent Nos. 8,802,328, 8,753,785 and 9,434,003. We believe Plansee/GTP's claims to be without merit and we intend to defend this action vigorously. Given that the case is still in its early stages, we are unable to predict the outcome of this arbitration at this time and accordingly are not able to estimate any range of reasonably possible losses.

14. Segment Information

Our chief operating decision makers ("CODM"), the CEO and the CFO, 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 CEO. 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 income (loss) before the provision for income taxes are as follows (in thousands):

	Years Ended December 31,		
	2021	2020	2019
United States	$ (195,208)	$ (179,657)	$ (32
Foreign	2,885	826	
Total	$ (192,323)	$ (178,831)	$ (32

The provision for income taxes is comprised of the following (in thousands):

	Years Ended December 31, 2021	2020	2019
Current:			
Federal	$ —	$ —	$
State	107	21	
Foreign	1,012	472	
Total current	1,119	493	
Deferred:			
Federal	—	—	
State	—	—	
Foreign	(73)	(237)	
Total deferred	(73)	(237)	
Total provision for income taxes	$ 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, 2021	2020	2019
Tax at federal statutory rate	$ (40,387)	$ (37,552)	$ (67,795)
State taxes, net of federal effect	107	21	26
Impact on noncontrolling interest	6,074	4,522	4,001
Elimination of acquiree deferred taxes	2,149	—	—
Non-U.S. tax effect	412	78	264
Nondeductible expenses	3,603	908	144
Stock-based compensation	5,307	5,956	6,484
Loss on debt extinguishment	—	214	—
U.S. tax on foreign earnings (GILTI)	59	203	221
Acquisition contingent liability	(762)	—	—
Change in valuation allowance	24,484	25,906	57,288
Provision for income taxes	$ 1,046	$ 256	$ 633

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)%. For the year ended December 31, 2019, we recognized a provision for income taxes of $0.6 million on a pre-tax loss of $322.8 million, for an effective tax rate of (0.2)%. The effective tax rate for 2021, 2020 and 2019 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, 2021	December 31, 2020
Tax credits and net operating loss carryforwards	$ 562,384	$ 510,599
Lease liabilities	151,937	128,151
Depreciation and amortization	9,516	7,541
Deferred revenue	23,208	27,134
Accruals and reserves	14,524	15,068
Stock-based compensation	20,138	35,815
Other items - deferred tax assets	28,258	25,931
Gross deferred tax assets	809,965	750,239
Valuation allowance	(689,257)	(614,958)
Net deferred tax assets	120,708	135,281
Investment in PPA entities	(7,911)	(10,757)
Discount upon issuance of debt	—	(29,513)
Managed services - deferred costs	(20,935)	(21,898)
Right-of-use assets and leased assets	(89,165)	(70,818)
Other items - deferred tax liability	(1,742)	(1,413)
Gross deferred tax liabilities	(119,753)	(134,399)
Net deferred tax asset	$ 955	$ 882

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.

In August 2020, FASB issued ASU 2020-06. The new standard simplifies the accounting for convertible instruments by eliminating the conversion option separation model for convertible debt that can be settled in cash. The guidance is effective for fiscal years beginning after December 15, 2021, with early adoption permitted as early as fiscal years beginning after December 15, 2020. We elected to early adopted ASU 2020-06 as of January 1, 2021, and upon adoption, we combined the previously separated equity component with the liability component of Green Notes that were issued in 2021. There will no longer be a debt discount representing the difference between the carrying value and the principal of the convertible debt instrument. As a result, the deferred tax liabilities for debt discount established at issuance was adjusted accordingly upon the adoption of ASU 2020-06, offset by a corresponding impact to the increase of valuation allowance, thus has no impact on our financial results.

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 $689.3 million and $615.0 million as of December 31, 2021 and 2020, respectively. The net change in the total valuation allowance for the years ended December 31, 2021 and 2020 was an increase of $74.3 million and a decrease of $18.6 million, respectively.

At December 31, 2021, we had federal and California net operating loss carryforwards of $2.1 billion and $1.3 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 2022 - 2026	$ 0.1	$ —
Expire in 2027-2031	0.6	0.5
Expire beginning in 2032	1.0	0.8
Carryforward indefinitely	0.4	—
Total	$ 2.1	$ 1.3

At December 31, 2021, we also had other state net operating loss carryforwards of $366.1 million, that will begin to expire in 2022. In addition, we had approximately $26.2 million of federal research credit, $6.6 million of federal investment tax credit, and $15.9 million of state research credit carryforwards.

The expiration of the federal and California credit carryforwards is summarized as follows (in millions):

	Federal	Californi
Expire in 2022 - 2026	$ 1.7	$
Expire in 2027 - 2031	7.2	
Expire beginning in 2032	23.9	
Carryforward indefinitely	—	
Total	$ 32.8	$

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, 2021. 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, 2021, the amount of uncertain tax positions increased by $4.3 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,	
	2021	2020
Unrecognized tax benefits beginning balance	$ 37,753	$ 34,480
Gross decrease for tax positions of prior year	—	—
Gross increase for tax positions of prior year	95	307
Gross increase for tax positions of current year	4,162	2,966
Unrecognized tax benefits end balance	$ 42,010	$ 37,753

If fully recognized in the future, there would be no impact to the effective tax rate, and $38.7 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 interest or penalties accrued during or for the years ended December 31, 2021 and 2020.

We are subject to taxation in the United States and various states and foreign jurisdictions. We currently do not have any income tax examinations in progress nor have we had any income tax examinations since our inception. 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 does not have a material impact on our financial results for the year ended December 31, 2021.

Our accumulated undistributed foreign earnings as of December 31, 2021 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,		
	2021	2020	2019
Numerator:			
Net loss attributable to Class A and Class B common stockholders	$ (164,445)	$ (157,553)	$ (304,414)
Deemed dividend	—	—	(2,454)
Net loss available to Class A and Class B common stockholders	$ (164,445)	$ (157,553)	$ (306,868)
Denominator:			
Weighted average shares of common stock, basic and diluted	173,438	138,722	115,118
Net loss per share available to Class A and Class B common stockholders, basic and diluted	$ (0.95)	$ (1.14)	$ (2.67)

On December 29, 2021, we issued 10,000,000 shares of Series A Redeemable Convertible Preferred Stock. For additional information, see Note 18 - *SK ecoplant Strategic Investment*. 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:

	Years Ended December 31,		
	2021	2020	2019
Convertible notes	14,187	29,729	27,213
Redeemable convertible preferred stock	82	—	—
Stock options and awards	7,018	6,109	4,631
	21,287	35,838	31,844

17. Business Combinations

On July 1, 2021, we acquired Softbank's 50% interest in Bloom Energy Japan, for an aggregate purchase price of $2.0 million, as set forth in the Share Purchase Agreement between the parties (the "Purchase Agreement"). After purchasing the remaining 50% interest in Bloom Energy Japan from Softbank, we own 100% of Bloom Energy Japan. The transaction was accounted for as a step acquisition, which required the re-measurement of our previously held 50% ownership interest in the joint venture to fair value and the acquired net assets became part of our operations upon closing.

In accordance with ASC 805 *Business Combinations*, we allocated the purchase price of our acquisitions to the tangible assets, liabilities and intangible assets acquired based on fair values and we recorded the excess purchase price over those fair values as goodwill. The fair value of assets acquired and liabilities assumed as part of this transaction are not material. The fair value of net tangible assets acquired approximated their carrying value. The Purchase Agreement included an earn-out related to a potential sale of Energy Servers to an identified customer (up to 10.5 megawatts of aggregate baseload) for an additional payment of up to approximately $3.6 million, which can be earned on or before the two year anniversary of the BEJ Closing Date. Acquisition-related costs were expensed as incurred and were not material. In the fourth quarter of 2021, we determined that no additional consideration with relation to the earn-out would be paid and the contingency was resolved.

Goodwill resulting from the transaction constitutes the excess of the consideration paid over the fair values of the assets acquired and liabilities assumed and primarily represents the expected benefits of streamlining our marketing and sales activities in Japan. We recognized acquired goodwill of $2.0 million which is recorded in long-term assets as of December 31, 2021. This acquired goodwill is not deductible for tax purposes. In connection with the acquisition and as a result of the re-measurement, we recognized $2.0 million fair value investment on the previously written-off equity investment in our original 50% interest in Bloom Energy Japan as of July 1, 2021 as a gain in other income (expense), net on our consolidated statement of operations. The loss from operations since the acquisition date that had been included in the consolidated statement of operations was $1.1 million.

18. 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. 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").

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. SK ecoplant may exercise the Option through August 31, 2023, and the transaction must be 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 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 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, 2021, we recognized Product Revenue of $2.8 million in connection with this arrangement. The unrecognized amount of $34.2 million included $7.8 million in deferred revenue and customer deposits and $26.4 million in long-term deferred revenue and customer deposits, non-current, on the consolidated balance sheet.

We revalued the Option to its fair value as of December 31, 2021, and recorded a loss of $3.6 million, which is included in other income (expense), net in our consolidated statements of operations. The fair value of the Option is reflected in Accrued expenses and other current liabilities in our consolidated balance sheet.

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.

Description of RCPS. The significant rights and preferences of the RCPS are as follows:

Liquidation: Upon the liquidation or dissolution of Bloom, or a deemed liquidation event (which includes a change in control or the sale or other disposition of all or substantially all of our assets), the holders of the RCPS are entitled to receive in preference to the holders of the Common Stock, the greater of (i) their liquidation preference or (ii) an amount they would be entitled to receive on an as-converted basis. The liquidation preference is subject to adjustment in the event of stock splits or combinations, and dividends or other distributions on the Class A Common Stock which are payable in shares of Class A Common Stock. After payment of the liquidation preference to the holders of the RCPS, our remaining assets are available for distribution to the holders of Common Stock on a pro rata basis.

Redemption rights: If approved by a majority of the holders of the RCPS, the RCPS may be redeemed by Bloom after the 10-month anniversary of the issuance date. The redemption price is $25.50 per share.

Additionally, certain redemption provisions apply following 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).

Conversion: The RCPS are convertible at any time at SK ecoplant's option into Class A common stock at $25.50 per share (subject to adjustment in the event of stock splits or combinations, and dividends or other distributions on the Class A Common Stock which are payable in shares of Class A Common Stock).

In addition, on the first anniversary of the issuance date, the RCPS shall automatically convert into shares of Class A Common Stock at the conversion price in effect at that time.

Protective provisions: Bloom is prohibited from the following actions without the affirmative vote of a majority of the holders of the RCPS: (i) increasing the authorized number of shares of RCPS; (ii) authorizing or creating any new class of stock that is senior to or on a parity with the RCPS or increasing or decreasing the authorized number of shares of any such new class of stock; (iii) amending the rights, preferences or privileges of the RCPS; and (iv) redeeming the RCPS.

Voting and dividend rights: The holders of the RCPS have no voting rights except on matters related to the RCPS and are not entitled to dividends.

Investor Agreement. In connection with the Initial Investment, we entered into an Investor Agreement with SK ecoplant, which provides for certain rights and restrictions relating to the Initial Investment and the subsequent purchase of the Option Shares:

- Board composition: Following the purchase of the Option Shares and continuing until it owns less than 5% of the Class A Common Stock, the holders of the RCPS will be entitled to nominate one member to our board of directors.
- Voting rights: From the date on which SK ecoplant purchases the Option Shares until the date on which it owns less than 5% of the Class A Common Stock, SK ecoplant shall vote in accordance with the majority of our Board of Directors, except that SK ecoplant may vote in its sole discretion on matters regarding any transactions between us and any Korean companies operating in the construction business.
- Restrictions on dispositions: SK ecoplant cannot sell the Option Shares without the prior consent of the majority of our board of directors during the period commencing on the date on which the Options Shares are purchased and continuing until the 2nd anniversary thereof. SK ecoplant has the right to sell the Class A Common Stock received on conversion of the RCPS prior to its exercise of the Option. However, if SK ecoplant holds the Class A Common Stock received on conversion of the RCPS at the time it exercises the Option, these share are also subject to the aforementioned restriction on disposition.
- Restrictions on beneficial ownership: Following the issuance of the RCPS and continuing until the later of (i) the second anniversary of the date of issuance of the Option Shares; (ii) the date on which SK ecoplant no longer has the right to designate a director to the board; and (iii) the date on which SK ecoplant owns less than 5% of the shares of Class A Common Stock, SK ecoplant may not, without Bloom's consent: (i) acquire shares of Class A Common Stock other than as provided by the SPA; (ii) call any stockholders meeting or propose any matter to be voted on by the board; (iii) nominate any person not approved by the board; (iv) support any tender for Bloom's securities; (v) solicit any proxies; (vi) propose any merger or business combination; or (vii) propose any restructuring or liquidation (amongst other actions).

- Preemptive rights: Subsequent to the purchase of the Option Shares, if we issue any shares, SK ecoplant has the right to purchase the number of shares as are required to maintain its ownership percentage, on the same terms and conditions and at the same price as issued to other investors.

19. 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, 2021. Based on such evaluation, our Chief Executive Officer and Chief Financial Officer have concluded that as of December 31, 2021, 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, 2021, there were no changes in our internal controls over financial reporting, which were identified in connection with management's evaluation required by paragraph (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 CEO and CFO, is responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Rules 13a-15(f) and 15d15(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, 2021, 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 our assessment, management has concluded that our internal control over financial reporting was effective as of the end of fiscal 2021 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 2021 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 INSPECTION

Not applicable.

Part III

ITEM 10 - DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information required by this Item 10 of Annual Report on Form 10-K is incorporated by reference herein to our Proxy Statement for the 2022 Annual Meeting of Stockholders to be filed with the SEC within 120 days of the year ended December 31, 2021.

ITEM 11 - EXECUTIVE COMPENSATION

The information required by this Item 11 of Annual Report on Form 10-K is incorporated by reference herein to our Proxy Statement for the 2022 Annual Meeting of Stockholders to be filed with the SEC within 120 days of the year ended December 31, 2021.

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

The information required by this Item 12 of Annual Report on Form 10-K is incorporated by reference herein to our Proxy Statement for the 2022 Annual Meeting of Stockholders to be filed with the SEC within 120 days of the year ended December 31, 2021.

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

The information required by this Item 13 of Annual Report on Form 10-K is incorporated by reference herein to our Proxy Statement for the 2022 Annual Meeting of Stockholders to be filed with the SEC within 120 days of the year ended December 31, 2021.

ITEM 14 - PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information required by this Item 14 of Annual Report on Form 10-K is incorporated by reference herein to our Proxy Statement for the 2022 Annual Meeting of Stockholders to be filed with the SEC within 120 days of the year ended December 31, 2021.

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.

			Incorporated by Reference			
Exhibit Number		**Description**	**Form**	**File No.**	**Exhibit**	**Filing Date**
3.1		Restated Certificate of Incorporation	10-Q	001-38598	3.1	9/7/2018
3.2		Amended and Restated Bylaws, effective November 5, 2020	8-K	001-38598	3.2	11/12/2020
3.3		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				Filed herewith
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	^	2018 Employee Stock Purchase Plan and form of agreements used thereunder	S-1/A	333-225571	10.5	7/9/2018
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	^	Consulting Agreement between the Registrant and Colin L. Powell, dated as of January 29, 2009	S-1	333-225571	10.31	6/12/2018
10.9	^	Amendment to Consulting Agreement between the Registrant and Colin L. Powell, dated as of July 31, 2019	10-K	001-38598	10.14	3/31/2020
10.10		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
10.11	^	Form of Indemnification Agreement	10-Q	001-38598	10.1	9/7/2018
10.12	^	Form of Offer Letter	10-K	001-38598	10.27	3/22/2019
10.13	†	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
10.14	†	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
10.15		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
10.16		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
10.17	x	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

10.18	x	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
10.19	x	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
10.20	x	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
10.21	x	Repurchase Agreement between the Company and Diamond State Generation Partners LLC, dated June 14, 2019	10-Q	001-38598	10.5	8/14/2019
10.22	x	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
10.23	x	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
10.24	x	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
10.25	x	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
10.26	^	Bloom Energy Corporation 2021 Deferred Compensation Plan	10-K	001-38598	10.26	2/26/2021
10.27	x	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
10.28	x	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
10.29	x	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
10.30	x	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
10.31	x	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
10.32		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 Chris White, dated April 16, 2019	10-K	001-38598	10.38	3/31/2020

10.34	^	Change of Control and Severance Agreement between the Company and Chris White dated April 16, 2019	10-K	001-38598	10.39	3/31/2020
10.35	^	Offer Letter between the Company and Gregory Cameron, dated March 20, 2020	8-K	001-38598	10.1	4/2/2020
10.36		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
10.37		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
10.38	x	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
10.39	x	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
10.40		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
10.41	^	Offer Letter between the Registrant and Guillermo Brooks dated May 31, 2021	10-Q	001-38598	10.1	8/6/2021
10.42		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
10.43	x	Purchase, Engineering, Procurement and Construction Contract between the Registration, 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
10.44	x	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
10.45	^	Form of Employment, Change in Control and Severance Agreement	10-Q	001-38598	10.5	8/6/2021
10.46	^	Form of Preferred Stock Unit Agreement under 2018 Equity Incentive Plan				Filed herewith
10.47		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
110.48	x	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
10.49		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
10.50		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
10.51	x	Master Supply Agreement, dated December 24, 2021, by and between Registrant and SK E&C BETEK Corporation				Filed herewith
16.1		Letter dated September 4, 2020 from PricewaterhouseCoopers LLP to the Securities and Exchange Commission	8-K	001-38598	16.1	9/4/2020

21.1		List of Subsidiaries				Filed herewith
23.1		Consent of Independent Registered Public Accounting Firm, PricewaterhouseCoopers LLP				Filed herewith
23.2		Consent of Independent Registered Public Accounting Firm, Deloitte & Touche LLP				Filed herewith
31.1		Certification of 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 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				Filed 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.

** The certifications furnished in Exhibit 32.1 hereto are deemed to accompany this Annual Report on Form 10-K and will not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, or otherwise subject to the liability of that section, nor shall it be deemed incorporated by reference into any filing under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended.

† Confidential treatment requested with respect to portions of this exhibit.

x Portions of this exhibit are redacted as permitted under Regulation S-K, Rule 601.

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 25, 2022	By:	/s/ KR Sridhar
			KR Sridhar Founder, President, Chief Executive Officer and Director (Principal Executive Officer)
Date:	February 25, 2022	By:	/s/ Gregory Cameron
			Gregory Cameron Executive Vice 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 25, 2022	/s/ KR Sridhar KR Sridhar Founder, President, Chief Executive Officer and Director (Principal Executive Officer)
Date:	February 25, 2022	/s/ Gregory Cameron Gregory Cameron Executive Vice President and Chief Financial Officer (Principal Financial and Accounting Officer)
Date:	February 25, 2022	/s/ Michael Boskin Michael Boskin Director
Date:	February 25, 2022	/s/ Mary K. Bush Mary K. Bush Director
Date:	February 25, 2022	/s/ John T. Chambers John T. Chambers Director
Date:	February 25, 2022	/s/ Jeffrey Immelt Jeffrey Immelt Director
Date:	February 25, 2022	/s/ Scott Sandell Scott Sandell Director
Date:	February 25, 2022	/s/ Eddy Zervigon Eddy Zervigon Director

DESCRIPTION OF REGISTRANT'S SECURITIES REGISTERED UNDER SECTION 12 OF THE SECURITIES EXCHANGE ACT OF 1934, AS AMENDED

The following brief description of the capital stock of Bloom Energy Corporation ("us", "our", "we", or the "Company") is a summary. This summary is not complete and is subject to and qualified in its entirety by reference to the complete text of our Restated Certificate of Incorporation ("Certificate of Incorporation"), our Amended and Restated By-Laws ("By-Laws") and Certificate of Designation of Series A Redeemable Convertible Preferred Stock ("Certificate of Designation"). We encourage you to read the Certificate of Incorporation, Amended and Restated By-Laws and Certificate of Designation carefully.

General

Our authorized capital stock consists of 600,000,000 shares of Class A common stock, $0.0001 par value per share, 600,000,000 shares of Class B common stock, $0.0001 par value per share, and 10,000,000 shares of undesignated preferred stock, $0.0001 par value per share.

For a description of certain provisions that may have the effect of delaying, deferring or preventing a change in control of the Company, please see Part I, Item 1A, Risk Factors of our Annual Report on Form 10-K for the fiscal year ended December 31, 2021 under the subheadings, "*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 including our directors, executive officers and significant stockholders, which limits or precludes your ability to influence corporate matters and may adversely affect the trading price of our Class A common stock*" and "*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*."

Class A Common Stock and Class B Common Stock

Dividend Rights

Subject to preferences that may apply to any shares of preferred stock outstanding at the time, the holders of our common stock are entitled to receive dividends out of funds legally available if our board of directors, in its discretion, determines to issue dividends and then only at the times and in the amounts that our board of directors may determine.

Voting Rights

Holders of our Class A common stock are entitled to one vote for each share of Class A common stock held on all matters submitted to a vote of stockholders and holders of our Class B common stock are entitled to ten votes for each share of Class B common stock held on all matters submitted to a vote of stockholders. Holders of shares of our Class A common stock and Class B common stock vote together as a single class on all matters (including the election of directors) submitted to a vote of stockholders, unless otherwise required by Delaware law or our restated Certificate of Incorporation. Delaware law could require either holders of our Class A common stock or Class B common stock to vote separately as a single class in the following circumstances:

- if we were to seek to amend our restated Certificate of Incorporation to increase or decrease the par value of a class of our capital stock, then that class would be required to vote separately to approve the proposed amendment; and

- if we were to seek to amend our restated Certificate of Incorporation in a manner that alters or changes the powers, preferences, or special rights of a class of our capital stock in a manner that affected its holders adversely, then that class would be required to vote separately to approve the proposed amendment.

Our restated Certificate of Incorporation does not provide for cumulative voting for the election of directors. As a result, the holders of a majority of our voting shares can elect all of the directors then standing for election. Our restated Certificate of Incorporation establishes a classified board of directors, which is divided into three classes with staggered three-year terms. Only one class of directors will be elected at each annual meeting of our stockholders, with the other classes continuing for the remainder of their respective three-year terms.

KR Sridhar, our Chief Executive Officer and Chairman, has entered into voting agreements with certain of our stockholders who hold Class B common stock. Under the voting agreement (a form of which is filed as an exhibit to our Annual Report on Form 10-K for the year ended December 31, 2019), stockholders agreed to vote all of their shares as directed by, and granted an irrevocable proxy to, Mr. Sridhar at his discretion on all matters to be voted upon by stockholders. Each of the voting agreements will automatically terminate:

(i) upon the liquidation, dissolution or winding up of our business operations;

(ii) upon the execution by us of a general assignment for the benefit of creditors or the appointment of a receiver or trustee to take possession of our property and assets;

(iii) following our initial public offering, as to (a) any shares of Class B common stock that are converted to Class A common stock pursuant to our restated Certificate of Incorporation and (b) the Class A common stock resulting from such conversion (but such voting agreement shall remain effective as to any Class B common stock not so converted);

(iv) from and after the third anniversary of our initial public offering, at any time upon such resolution by our board of directors;

(v) upon the fifth anniversary of our initial public offering;

(vi) upon the date that is 60 days following the date on which KR Sridhar, or his successor under the voting agreement, ceases to provide services to us as one of our officers;

(vii) upon such date as of which none of the parties, other than KR Sridhar or his successor, to the then-outstanding voting agreements, was one of the five largest holders of our capital stock (which entered into a voting agreement) as of the date of our initial public offering; or

(viii) at such time following the date of our initial public offering when there is no Class B common stock outstanding.

No Preemptive or Similar Rights

Our common stock is not entitled to preemptive rights, and is not subject to redemption or sinking fund provisions.

Right to Receive Liquidation Distributions

Upon our liquidation, dissolution or winding-up, the assets legally available for distribution to our stockholders would be distributable ratably among the holders of our common stock and any participating preferred stock outstanding at that time, subject to prior satisfaction of all outstanding debt and liabilities and the preferential rights of and the payment of liquidation preferences, if any, on any outstanding shares of preferred stock.

Change of Control Transactions

In the case of any distribution or payment in respect of the shares of our Class A common stock or Class B common stock upon a merger or consolidation with or into any other entity, or other substantially similar transaction, the holders of our Class A common stock and Class B common stock will be treated equally and identically with respect to shares of Class A common stock or Class B common stock owned by them, unless the only difference in the per share distribution to the holders of the Class A common stock and Class B common stock is that any securities distributed to the holder of a share of Class B common stock have ten times the voting power of any securities distributed to the holder of a share of Class A common stock, or, if there are other differences, then such merger, consolidation, or other transaction is approved by the affirmative vote of the holders of a majority of the outstanding shares of Class A common stock and 80% of the outstanding shares of Class B common stock, each voting as a separate class.

Subdivisions and Combinations

If we subdivide or combine in any manner outstanding shares of Class A common stock or Class B common stock, the outstanding shares of the other class will be subdivided or combined in the same manner, unless different treatment of the shares of each class is approved by the affirmative vote of the holders of a majority of the outstanding shares of Class A common stock and 80% of the outstanding shares of Class B common stock, each voting as a separate class.

Conversion

Each outstanding share of Class B common stock is convertible at any time at the option of the holder into one share of Class A common stock. In addition, each share of Class B common stock will convert automatically into one share of Class A common stock upon any transfer, whether or not for value, which occurs after the date of our initial public offering, except for certain permitted transfers described in our restated Certificate of Incorporation, including transfers to family members, trusts solely for the benefit of the stockholder or their family members, and partnerships, corporations, and other entities exclusively owned by the stockholder or their family members.

In addition, partnerships or limited liability companies that hold shares of Class B common stock as of the ate of our initial public offering may distribute their Class B common stock to their respective partners or members (who may further distribute the Class B common stock to their respective partners or members) without triggering a conversion to Class A common stock. Such distributions must be conducted in accordance with the ownership interests of such partners or members and the terms of any agreements binding the partnership or limited liability company.

All the outstanding shares of our Class B common stock will convert automatically into shares of our Class A common stock upon the date that is the earliest to occur of (i) immediately prior to the close of business on the fifth anniversary of our initial public offering, (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. Following such conversion, each share of Class A common stock will have one vote per share and the rights of the holders of all outstanding common stock will be identical. Once converted or transferred and converted into Class A common stock, the Class B common stock may not be reissued.

Preferred Stock

Our board of directors is authorized, subject to limitations prescribed by Delaware law, to issue preferred stock in one or more series, to establish from time to time the number of shares to be included in each series and to fix the designation, powers, preferences and rights of the shares of each series and any of its qualifications, limitations or restrictions, in each case without further vote or action by our stockholders. We currently have 10 million shares of Series A Redeemable Convertible Preferred Stock ("Series A Preferred Stock") outstanding.

Dividend Rights

The holders of Series A Preferred Stock are not entitled to receive dividends

Voting Rights

The Series A Preferred Stock do not have voting rights and are therefore not entitled to vote on any matter except as described below.

So long as any shares of Series A Preferred Stock remain outstanding, an affirmative vote of the holders of at least a majority of the then outstanding shares of Series A Preferred Stock, voting as a separate series is required for any of the folloiwng: (a) increase the authorized number of shares of Series A Preferred Stock; (b) authorize or create (by reclassification or otherwise) or issue or sell, or obligate itself to issue or sell, any new class or series of capital stock or any security convertible into or exercisable for any new class or series of capital stock having rights, preferences or privileges, as then in effect, that are senior to or on a parity with the Series A Preferred Stock or increase or decrease the authorized number of shares of any such new class or series of capital stock; (c) amend, modify or repeal any provision of the Certificate of Designation (including any certificate of designation relating to any series of Preferred Stock), as then in effect, in a way that adversely affects the rights, preferences or privileges of the Series A Preferred Stock; or (d) allow the Company to redeem the Series A Preferred Stock.

Conversion

Each share of Series A Preferred Stock may be converted at any time, at the option of the holder, into one share of our Class A Common Stock (which is equivalent to an initial conversion price of $25.50 per share) plus cash in lieu of fractional shares. However, on the first anniversary of the original issue date (the "Mandatory Conversion Time"), all outstanding shares of Series A Preferred Stock shall automatically be converted into one share of our Class A Common Stock (which is equivalent to an initial conversion price of $25.50 per share) plus cash in lieu of fractional shares. In all cases, the conversion rate is subject to adjustment upon the occurrence of certain events, as described in the Certificate of Designation.

Redemption

Shares of Series A Preferred Stock are not redeemable upon the election of the holders of Series A Preferred Stock.

Subject to the any protective voting provisions applicable to redemptions, each share of Series A Preferred Stock (and not fewer than all shares of Series A Preferred Stock) may be redeemed by the Company out of funds lawfully available therefor at the Redemption Price (as defined in the Certificate of Designation) in one installment commencing on a date not less than sixty (60) days after and not more than ninety (90) days after the Company sends to the holders of all then outstanding shares of Series A Preferred Stock written notice of the redemption of all shares of Series A Preferred Stock (the "Redemption Notice"); provided that the Company may not send the Redemption Notice until ten (10) months have passed from the original issue date.

Liquidation

Subject to the prior and superior rights of the holders of any shares of any other class or series of preferred stock, the holders of Series A Preferred Stock are entitled to receive, in the event that the Company is liquidated, dissolved or wound up, whether voluntarily or involuntarily, $25.50 per share (the "Liquidation Preference"). The holders of shares of Series A Preferred Stock will share ratably in any distribution of the funds and assets available for distribution in proportion to the respective amounts that would otherwise be payable in respect of the shares of Series A Preferred Stock held by them upon such distribution if all amounts payable on or with respect to such shares were paid in full.

Description of Green Notes due 2025

The following summary of Bloom Energy Corporation's 2.50% Green Convertible Senior Notes due 2025 (the "Notes"), is a summary and does not purport to be complete. It is subject to and qualified in its entirety by reference to the Indenture, dated as of August 11, 2020 (the "Indenture"), between Bloom Energy Corporation and U.S. Bank National Association, as trustee (the "Trustee").

The Company encourages you to read the above referenced Indenture.

General

The following is a description of certain of the specific terms and conditions of the Indenture with respect to the Notes.

The Notes were initially issued in an aggregate principal amount of $230,000,000. The Notes are senior, unsecured obligations and will be (1) equal in right of payment with the Company's existing and future senior, unsecured indebtedness; (2) senior in right of payment to the Company's future indebtedness that is expressly subordinated to the Notes; (3) effectively subordinated to the Company's existing and future secured indebtedness, to the extent of the value of the collateral securing that indebtedness; and (4) structurally subordinated to all existing and future indebtedness and other liabilities, including trade payables, and (to the extent the Company is not a holder thereof) preferred equity, if any, of the Company's subsidiaries.

The maturity date of the Notes is August 15, 2025, unless earlier converted, redeemed or repurchased.

The Notes are represented by one or more registered notes in global form, but in certain limited circumstances may be represented by notes in definitive form.

The Notes were issued in denominations of $1,000 and integral multiples of $1,000.

Holders may convert their Notes at their option only under the following circumstances: (1) during any calendar quarter (and only during such calendar quarter) commencing after the calendar quarter ending on December 31, 2020, if the last reported sale price per share of our Class A common stock exceeds 130% of the conversion price for each of at least 20 trading days during the 30 consecutive trading days ending on, and including, the last trading day of the immediately preceding calendar quarter; (2) during the five consecutive business days immediately after any 10 consecutive trading day period (such 10 consecutive trading day period, the "measurement period") in which the trading price per $1,000 principal amount of notes for each trading day of the measurement period was less than 98% of the product of the last reported sale price per share of our Class A common stock on such trading day and the conversion rate on such trading day; or (3) upon the occurrence of specified corporate events.

On or after May 15, 2025, until the close of business on the second scheduled trading day immediately preceding the maturity date, holders of the Notes may convert their Notes at any time, regardless of the foregoing circumstances.

The Notes are subject to redemption, in whole or in part, at the Company's option, on or after August 21, 2023 and on or before the 26th scheduled trading day immediately before the maturity date, at a cash redemption price equal to the principal amount of the notes to be redeemed, plus accrued and unpaid interest, if any, to, but excluding, the redemption date, but only if the last reported sale price per share of our Class A common stock exceeds 130% of the conversion price on (1) each of at least 20 trading days, whether or not consecutive, during the 30 consecutive trading days ending on, and including, the trading day immediately before the date we send the related redemption notice; and (2) the trading day immediately before the date we send such notice. In addition, calling any note for redemption will constitute a makewhole fundamental change with respect to that note, in which case the conversion rate applicable to the conversion of that note will be increased in certain circumstances if it is converted after it is called for redemption.

The Notes are subject to repurchase by us at the option of the holders following a fundamental change at a repurchase price equal to 100% of the principal amount of the Notes to be repurchased, plus accrued and unpaid interest, if any, to, but excluding, the fundamental change repurchase date.

A "**fundamental change**" will be deemed to have occurred at the time after the Notes are originally issued if any of the following occurs:

(1) a "person" or "group" (within the meaning of Section 13(d)(3) of the Exchange Act) (other than (w) us, (x) our wholly owned subsidiaries, (y) any employee benefit plans of ours or our wholly owned subsidiaries or (z) any "permitted party" (as defined below under this "—Definitions" section) or any "person" or "group" consisting solely of permitted parties) files any report with the SEC indicating that such person or group has become the direct or indirect "beneficial owner" (as defined below) of shares of our Class A common stock or common equity representing more than 50% of the voting power of all of our then-outstanding Class A common stock or common equity, as the case may be; or (2) any permitted party, or any "person" or "group" consisting solely of permitted parties, files any report with the SEC indicating that such permitted party, "person" or "group," as applicable, has become the direct or indirect "beneficial owner" of (A) our Class A common stock representing more than 50% of the voting power of all of our then-outstanding Class A common stock; (B) our common equity representing more than 55% of the voting power of all of our then-outstanding common equity; or (C) our Class A common stock representing more than 50% of the number of our then-outstanding shares of Class A common stock (excluding, solely for purposes of clause (A) and this clause (C), any Class A common stock that such permitted party, "person" or "group," as applicable, beneficially owns solely by virtue of its beneficial ownership of our Class B common stock);

(2) the consummation of: (1) any sale, lease or other transfer, in one transaction or a series of transactions, of all or substantially all of the assets of us and our subsidiaries, taken as a whole, to any person, other than solely to one or more of our wholly owned subsidiaries; or (2) any transaction or series of related transactions in connection with which (whether by means of merger, consolidation, share exchange, combination, reclassification, recapitalization, acquisition, liquidation or otherwise) all of our Class A common stock is exchanged for, converted into, acquired for, or constitutes solely the right to receive, other securities, cash or other property; *provided*, *however*, that any merger, consolidation, share exchange or combination of us pursuant to which the persons that directly or indirectly "beneficially owned" (as defined below) all classes of our common equity immediately before such transaction directly or indirectly "beneficially own," immediately after such transaction, more than 50% of all classes of common equity of the surviving, continuing or acquiring company or other transferee, as applicable, or the parent thereof, in substantially the same proportions vis-à-vis each other as immediately before such transaction will be deemed not to be a fundamental change pursuant to this clause (ii);

(3) the Company's stockholders approve any plan or proposal for the liquidation or dissolution of the Company; or

(4) the Company's Class A common stock ceases to be listed on any of The New York Stock Exchange, The Nasdaq Global Market or The Nasdaq Global Select Market (or any of their respective successors).

Interest and Principal

The Notes bear interest at a rate of 2.50% per year, payable semiannually in arrears on February 15 and August 15 of each year, beginning on February 15, 2021. The Notes will mature on August 15, 2025, unless earlier repurchased, redeemed or converted.

Interest will be paid to the person in whose name a note is registered at the close of business on February 1 or August 1, as the case may be, immediately preceding the relevant interest payment date (each, a "**regular record date**"). Interest on the Notes will be computed on the basis of a 360-day year composed of twelve 30-day months, and, for partial months, on the basis of the number of days actually elapsed in a 30-day month.

If any interest payment date, the maturity date or any earlier required repurchase date upon a fundamental change of a note falls on a day that is not a business day, the required payment will be made on the next succeeding business day and no interest on such payment will accrue in respect of the delay. The term "**business day**" means, with respect to any note, any day other than a Saturday, a Sunday or a day on which the Federal Reserve Bank of New York is authorized or required by law or executive order to close or be closed.

Optional Redemption

No "**sinking fund**" is provided for the Notes, which means that the Company is not required to redeem or retire the Notes periodically. Prior to August 21, 2023, the Notes will not be redeemable. Subject to the terms of the Indenture, the Company has the right, at its election, to redeem all, or any portion in an authorized denomination, of the Notes, at any time and from time to time, on a redemption date on or after August 21, 2023 and on or before the 26th scheduled trading day immediately before the maturity date, for cash, but only if the last reported sale price per share of Class A common stock exceeds 130% of the conversion price on (i) each of at least 20 trading days, whether or not consecutive, during the 30 consecutive trading days ending on, and including, the trading day immediately before the related redemption notice date; and (ii) the trading day immediately before such redemption notice date. In addition, calling any note for redemption will constitute a make-whole fundamental change with respect to that note, in which case the conversion rate applicable to the conversion of that note will be increased in certain circumstances if it is converted during the related redemption conversion period. If we elect to redeem less than all of the outstanding notes, then the redemption will not constitute a make-whole fundamental change with respect to the notes not called for redemption, and holders of the notes not called for redemption will not be entitled to an increased conversion rate for such notes.

The redemption date will be a business day of our choosing that is no more than 50, nor less than 30 scheduled trading days after the related redemption notice date (it being understood, for the avoidance of doubt, that such redemption notice date will be at least four scheduled trading days before the first day of the observation period relating to such redemption date pursuant to clause (ii) of the definition of "observation period"). However, if we elect to settle all conversions with a conversion date that occurs on or after the redemption notice date and on or before the second scheduled trading day immediately before the related redemption date by physical settlement, then we may instead elect to choose a redemption date that is a business day no more than 60, nor less than 30, calendar days after the date we send such redemption notice.

The redemption price for any note called for redemption will be the principal amount of such note plus accrued and unpaid interest on such note to, but excluding, the redemption date. However, if the redemption date is after a regular record date and on or before the next interest payment date, then (i) the holder of such note at the close of business on such regular record date will be entitled, notwithstanding such redemption, to receive, on or, at our election, before such interest payment date, the unpaid interest that would have accrued on such note to, but excluding, such interest payment date; and (ii) the redemption price will not include accrued and unpaid interest on such note to, but excluding, such redemption date.

The Company may not redeem any of the Notes if the principal amount of the notes has been accelerated and such acceleration has not been rescinded on or before the redemption date (including as a result of the payment of the related redemption price and any related interest described above on the redemption date).

Repurchase Rights

If the Company undergoes a fundamental change prior to the maturity date of the Notes, holders may require us to repurchase for cash all or any portion of their Notes at a repurchase price equal to 100% of the principal amount of the Notes to be repurchased, plus accrued and unpaid interest to, but excluding, the fundamental change repurchase date. The Notes will be the Company's senior unsecured obligations and will rank senior in right of payment to any of the Company's indebtedness that is expressly subordinated in right of payment to the Notes; equal in right of payment to any of the Company's existing and future liabilities that are not so subordinated; effectively junior in right of payment to any of the Company's secured indebtedness to the extent of the value of the assets securing such indebtedness; and structurally junior to all indebtedness and other liabilities (including trade payables) of the Company's current or future subsidiaries.

Payments on the Notes; Paying Agent and Registrar; Transfer and Exchange

The Company will pay or cause the paying agent to pay the principal of, and interest on, Notes in global form registered in the name of or held by DTC or its nominee by wire transfer in immediately available funds to DTC or its nominee, as the case may be, as the registered holder of such global note.

The Company will pay or cause the paying agent to pay the principal of any certificated Notes at the office or agency designated by us for that purpose. The Company has initially designated the trustee as the Company's paying agent and registrar and its agency in the continental United States as a place where Notes may be presented for payment or for registration of transfer. The Company may, however, change the paying agent or registrar without prior notice to the holders of the Notes, and the Company may act as paying agent or registrar. Interest on certificated Notes will be payable (i) to holders having an aggregate principal amount of $5,000,000 or less, by check mailed to the holders of these Notes and (ii) to holders having an aggregate principal amount of more than $5,000,000, either by check mailed to each holder or, upon application by such a holder to the registrar not later than the relevant regular record date, by wire transfer in immediately available funds to that holder's account within the United States if such holder has provided us, the trustee or the paying agent (if other than the trustee) with the requisite information necessary to make such wire transfer, which application shall remain in effect until the holder notifies, in writing, the registrar of the Notes to the contrary.

A holder of Notes may transfer or exchange Notes at the office of the registrar in accordance with the Indenture. The registrar and the trustee may require a holder, among other things, to furnish appropriate endorsements and transfer documents. No service charge will be imposed by us, the trustee or the registrar for any registration of transfer or exchange of Notes, but the Company may require a holder to pay a sum sufficient to cover any transfer tax or other similar governmental charge required by law or permitted by the Indenture. The Company are not required to transfer or exchange any note selected for redemption or surrendered for conversion or required repurchase.

The registered holder of a note will be treated as its owner for all purposes.

Indenture Provisions

Governing Law

The Indenture and the Notes are governed by, and construed in accordance with, the laws of the State of New York.

Consolidation, Merger and Sale of Assets

The Indenture provides that the Company may consolidate with or merge with or into any other person, and may sell, transfer, or lease or convey all or substantially all of the Company's properties and assets to another person; provided that the following conditions are satisfied:

- the resulting, surviving or transferee Person (the "Successor Corporation"), if not the Company, shall be a corporation organized and existing under the laws of the United States of America, any State thereof or the District of Columbia, and the Successor Corporation (if not the Company) shall expressly assume, by supplemental indenture, all of the obligations of the Company under the Notes and the Indenture; and

- immediately after giving effect to such transaction, no Default or Event of Default shall have occurred and be continuing under the Indenture.

If the Company consolidates or merges with or into any other person or sell, transfer, lease or convey all or substantially all of the Company's properties and assets in accordance with the Indenture, the Successor Corporation will be substituted for us in the Indenture, with the same effect as if it had been an original party to the Indenture. As a result, the Successor Corporation may exercise the Company's rights and powers under the Indenture, and the Company will be released from all the Company's liabilities and obligations under the Indenture and under the debt securities.

Any substitution of the Successor Corporation for us might be deemed for federal income tax purposes to be an exchange of the debt securities for "new" debt securities, resulting in recognition of gain or loss for such purposes and possibly certain other adverse tax consequences to beneficial owners of the debt securities. Holders should consult their own tax advisors regarding the tax consequences of any such substitution.

For purposes of this covenant, “person” means any individual, corporation, partnership, limited liability company, joint venture, association, joint-stock company, trust, unincorporated organization or government or any agency or political subdivision thereof or any other entity.

Events of Default

Each of the following events are defined in the Indenture as an “**Event of Default**" with respect to the Notes:

(i) default in the payment when due (whether at maturity, upon redemption, Repurchase upon Fundamental Change or otherwise) of the principal of, or the redemption price or fundamental change repurchase price for, any Note;

(ii) a default for thirty (30) consecutive days in the payment when due of interest on any Green Note;

(iii) the Company’s failure to deliver, when required by the Indenture, (x) a Fundamental Change Notice, or (y) a notice pursuant to Section 5.01(C)(i)(3), or (z) a notice of a Make Whole Fundamental Change (other than a Make-Whole Fundamental Change pursuant to clause (B) of the definition thereof) pursuant to the provisions referred to in Section 5.07(C), and, in the case of clause (x) only, such failure is not cured within five (5) days after its occurrence;

(iv) a default in the Company’s obligation to convert a Note in accordance with Article 5 upon the exercise of the conversion right with respect thereto, if such default is not cured within three (3) days after its occurrence;

(v) a default in the Company’s obligations under Article 6;

(vi) a default in any of the Company’s obligations or agreements under this Indenture or the Notes (other than a default set forth in clause (i), (ii), (iii), (iv) or (v) of Section 7.01(A)) where such default is not cured or waived within sixty (60) days after written notice to the Company by the Trustee, or to the Company and the Trustee by Holders of at least twenty five percent (25%) of the aggregate principal amount of Notes then outstanding, which notice must specify such default, demand that it be remedied and state that such notice is a “Notice of Default”;

(vii) a default by the Company or any of its Subsidiaries with respect to any one or more mortgages, agreements or other instruments under which there is outstanding, or by which there is secured or evidenced, any indebtedness for money borrowed of at least fifteen million dollars ($15,000,000) (or its foreign currency equivalent) in the aggregate of the Company or any of its Subsidiaries, whether such indebtedness exists as of the Issue Date or is thereafter created, where such default:

(1) constitutes a failure to pay the principal of such indebtedness when due and payable at its stated maturity, upon required repurchase, upon declaration of acceleration or otherwise, in each case after the expiration of any applicable grace period; or
(2) results in such indebtedness becoming or being declared due and payable before its stated maturity, in each case where such default is not cured or waived within thirty (30) days after notice to the Company by the Trustee or to the Company and the Trustee by Holders of at least twenty five percent (25%) of the aggregate principal amount of Notes then outstanding;

(viii) the Company or any of its Significant Subsidiaries, pursuant to or within the meaning of any Bankruptcy Law, either:

(1) commences a voluntary case or proceeding;
(2) consents to the entry of an order for relief against it in an involuntary case or proceeding;
(3) consents to the appointment of a custodian of it or for any substantial part of its property;
(4) makes a general assignment for the benefit of its creditors;
(5) takes any comparable action under any foreign bankruptcy law; or
(6) generally is not paying its debts as they become due; or

(ix) a court of competent jurisdiction enters an order or decree under any Bankruptcy Law that either:

(1) is for relief against Company or any of its Significant Subsidiaries in an involuntary case or proceeding;
(2) appoints a custodian of the Company or any of its Significant Subsidiaries, or for any substantial part of the property of the Company or any of its Significant Subsidiaries;
(3) orders the winding up or liquidation of the Company or any of its Significant Subsidiaries; or
(4) grants any similar relief under any foreign bankruptcy law,

and, in each case under Section 7.01(A)(ix), such order or decree remains unstayed and in effect for at least sixty (60) days.

Amendments

Without Consent of Holders. The Company and the Trustee may amend or supplement this Indenture or the Notes without the consent of any Holder to:

(A) cure any ambiguity or correct any omission, defect or inconsistency in this Indenture or the Notes;
(B) add guarantees with respect to the Company's obligations under this Indenture or the Notes;
(C) secure the Notes;
(D) add to the Company's covenants or Events of Default for the benefit of the Holders or surrender any right or power conferred on the Company under this Indenture;
(E) provide for the assumption of the Company's obligations under this Indenture and the Notes pursuant to, and in compliance with, Article 6;
(F) enter into supplemental indentures pursuant to, and in accordance with, Section 5.09 in connection with a Common Stock Change Event;
(G) irrevocably elect or eliminate any Settlement Method or Specified Dollar Amount; *provided*, *however*, that no such election or elimination will affect any Settlement Method theretofore elected (or deemed to be elected) with respect to any Note pursuant to Section 5.03(A);
(H) evidence or provide for the acceptance of the appointment, under this Indenture, of a successor Trustee;
(I) conform the provisions of this Indenture and the Notes to the "Description of Notes" section of the Company's preliminary offering memorandum, dated August 6, 2020, as supplemented by the related pricing term sheet, dated August 6, 2020;
(J) provide for or confirm the issuance of additional Notes pursuant to Section 2.03(B);
(K) comply with any requirement of the SEC in connection with any qualification of the Indenture or any supplemental indenture under the Trust Indenture Act, as then in effect; or
(L) make any other change to this Indenture or the Notes that does not, individually or in the aggregate with all other such changes, adversely affect the rights of the Holders, as such, in any material respect.

With Consent of Holders. The Company and the Trustee may, with the consent of the Holders of a majority in aggregate principal amount of the Notes then outstanding, amend or supplement this Indenture or the Notes or waive compliance with any provision of this Indenture or the Notes. Notwithstanding anything to the contrary in the foregoing sentence, but subject to Section 8.01, without the consent of each affected Holder, no amendment or supplement to this Indenture or the Notes, or waiver of any provision of this Indenture or the Notes, may:

(i) reduce the principal, or extend the stated maturity, of any Note;
(ii) reduce the Redemption Price or Fundamental Change Repurchase Price for any Note or change the times at which, or the circumstances under which, the Notes may or will be redeemed or repurchased by the Company;
(iii) reduce the rate, or extend the time for the payment, of interest on any Note;
(iv) make any change that adversely affects the conversion rights of any Note;
(v) impair the rights of any Holder set forth in Section 7.08 (as such section is in effect on the Issue Date);
(vi) change the ranking of the Notes;
(vii) make any Note payable in money, or at a place of payment, other than that stated in this Indenture or the Note;
(viii) reduce the amount of Notes whose Holders must consent to any amendment, supplement, waiver or other modification; or
(ix) make any direct or indirect change to any amendment, supplement, waiver or modification provision of this Indenture or the Notes that requires the consent of each affected Holder.

Additional Definitions

"**Fundamental Change Repurchase Price**" means the cash price payable by the Company to repurchase any Note upon its Repurchase Upon Fundamental Change, calculated pursuant to Section 4.02(D).

"**Repurchase Upon Fundamental Change**" means the repurchase of any Note by the Company pursuant to Section 4.02.

"**Holder**" means a person in whose name a Note is registered on the Registrar's books.

Exhibit 10.46

NOTICE OF PERFORMANCE-BASED STOCK UNITS (GLOBAL)

BLOOM ENERGY CORPORATION 2018 EQUITY INCENTIVE PLAN

Unless otherwise defined herein, the terms defined in the Bloom Energy Corporation (the "***Company***") 2018 Equity Incentive Plan (the "***Plan***") shall have the same meanings in this Notice of Performance-based Stock Units (the "***Notice***") and the attached Performance-based Stock Unit Agreement, including the Appendix attached hereto (the "***Appendix***"), which is generally applicable to you if you live or work outside the United States, and any special terms and conditions for your country set forth therein (collectively, the "***PSU Agreement***"). You have been granted an award of Performance-based Stock Units ("***PSUs***") under the Plan subject to the terms and conditions of the Plan, this Notice and the attached PSU Agreement.

Name: __

Number of PSUs: ____________

Date of Grant: __________

Grant Number: ______________

Vesting Schedule: See details below.

This Grant Notice may be executed and delivered electronically, whether via the Company's intranet or the Internet site of a third party or via email or any other means of electronic delivery specified by the Company. By accepting this award of PSUs, you consent to the electronic delivery and acceptance as further set forth in the PSU Agreement. You acknowledge that the vesting of the PSUs pursuant to this Notice is earned only by continuing Service, but you understand that your employment or consulting relationship with the Company or a Parent, Subsidiary or Affiliate can be terminated, and that nothing in this Notice of Grant, the PSU Agreement or the Plan changes the nature of that relationship. By accepting this award, you and the Company agree that this award is granted under and governed by the terms and conditions of the Plan, this Notice and the PSU Agreement.

BLOOM ENERGY CORPORATION **PURCHASER**

By: __ __
(Signature)

__ __
(Please print name and title) (Please print name)

Address:__ __

PEFRORMANCE-BASED STOCK UNIT AGREEMENT
BLOOM ENERGY CORPORATION
2018 EQUITY INCENTIVE PLAN

You have been granted Performance-based Stock Units ("***PSUs***") by Bloom Energy Corporation (the "***Company***") subject to the terms, restrictions and conditions of the Plan, the Notice of Performance-based Stock Units (the "***Notice***") and this Performance-based Stock Unit Agreement, including the Appendix, which is generally applicable to you if you live or work outside the United States, and any special terms and conditions for your country set forth therein (collectively, this "***PSU Agreement***").

1. **Settlement.** Settlement of PSUs shall be made in the same calendar year as the applicable date of vesting under the vesting schedule set forth in the Notice; provided, however, that if the vesting date under the vesting schedule set forth in the Notice is in December, then settlement of any PSUs that vest in December shall be within 30 days of vesting. Settlement of PSUs shall be in Shares. Settlement means the delivery to you of the Shares vested under the PSUs. Fractional Shares will not be issued. Notwithstanding the foregoing, settlement of PSUs may be subject to deferral in accordance with the terms of the Company's 2021 Deferred Compensation Plan.

2. **No Stockholder Rights.** Unless and until such time as Shares are issued in settlement of vested PSUs, you shall have no ownership of the Shares allocated to the PSUs and shall have no right to dividends or to vote such Shares.

3. **Dividend Equivalents.** Dividend equivalents, if any, shall not be credited to you, except as otherwise permitted by the Committee.

4. **No Transfer.** PSUs may not be sold, assigned, transferred, pledged, hypothecated, or otherwise disposed of in any manner other than by will or by the laws of descent or distribution or court order or unless otherwise permitted by the Committee.

5. **Termination.** If your Service terminates for any reason, all unvested PSUs shall be forfeited to the Company forthwith, and all rights you have to such PSUs shall immediately terminate, without payment of any consideration to you. For purposes of this award of PSUs, your Service will be considered terminated as of the date you are no longer providing Service (regardless of the reason for such termination and whether or not later found to be invalid or in breach of labor laws in the jurisdiction where you are employed or the terms of your employment or service agreement, if any) and will not be extended by any notice period mandated under local employment laws (*e.g.*, Service would not include a period of "garden leave" or similar period). In case of any dispute as to whether and when your termination of Service has occurred for purposes of the PSUs, the Committee shall have sole discretion to determine whether such termination has occurred (including whether you may still be considered to be providing Services while on a leave of absence) and the effective date of such termination.

6. **Responsibility for Taxes.** Regardless of any action the Company or, if different, your employer (the "***Employer***") take with respect to any or all income tax, social insurance, payroll tax, fringe benefits tax, payment on account and other tax-related items related to your participation in the Plan and legally applicable to you ("***Tax-Related Items***"), you acknowledge that the ultimate liability for all Tax-Related Items is and remains your responsibility and may exceed the amount actually withheld by the Company or the Employer. You further acknowledge that the Company and the Employer (a) make no representations or undertakings regarding the treatment of any Tax-Related Items in connection with any aspect of the award, including the grant, vesting or settlement of the PSUs, the subsequent sale of Shares acquired pursuant to such settlement and the receipt of any dividends; and (b) do not commit to and are under no obligation to structure the terms of the award or any aspect of the PSUs to reduce or eliminate your liability for Tax-Related Items or achieve any particular tax result. You acknowledge that if you are subject to Tax-Related Items in more than one jurisdiction, the Company and/or the Employer (or former employer, as applicable) may be required to withhold or account for Tax-Related Items in more than one jurisdiction.

Prior to any relevant taxable or tax withholding event, as applicable, you shall pay or make adequate arrangements to satisfy any withholding obligation the Company and/or the Employer may have for Tax-

Related Items. In this regard, you authorize the Company and/or the Employer, and their respective agents, at their discretion, to withhold all applicable Tax-Related Items from your wages or other cash compensation paid to you by the Company and/or the Employer or by one or a combination of the following methods: (a) payment by you to the Company or the Employer of an amount equal to the Tax-Related Items in cash, (b) having the Company withhold otherwise deliverable cash or Shares having a value equal to the Tax-Related Items to be withheld, (c) delivering to the Company already-owned Shares having a value equal to the Tax-Related Items to be withheld, (d) withholding from proceeds of the sale of the Shares either through a voluntary sale or through a mandatory sale arranged by the Company (on your behalf pursuant to this authorization), or (e) any other arrangement approved by the Company and permissible under applicable law; in all cases, under such rules as may be established by the Committee and in compliance with the Company's Insider Trading Policy and 10b5-1 Trading Plan Policy, if applicable; provided, however, that if you are a Section 16 officer of the Company under the Exchange Act, then the method of withholding shall be a mandatory sale under (d) above (unless the Committee shall establish an alternate method prior to the taxable or withholding event).

Depending on the withholding method, the Company may withhold or account for Tax-Related Items by considering applicable statutory withholding rates or other applicable withholding rates, including up to the maximum applicable rate in your jurisdiction in which case you may receive a refund of any over-withheld amount in cash and will have no entitlement to the equivalent in Shares. If the obligation for Tax-Related Items is satisfied by withholding in Shares, for tax purposes, you are deemed to have been issued the full number of Shares subject to the vested PSUs, notwithstanding that a number of the Shares are held back solely for the purpose of paying the Tax-Related Items.

Finally, you acknowledge that the Company has no obligation to deliver Shares or proceeds from the sale of Shares to you until you have satisfied the obligations in connection with the Tax-Related Items as described in this Section.

7. **<u>Nature of Grant</u>.** In accepting this award of PSUs, you acknowledge, understand and agree that:

(a) the Plan is established voluntarily by the Company, it is discretionary in nature and it may be modified, amended, suspended or terminated by the Company at any time, to the extent permitted by the Plan;

(b) the grant of the PSUs is exceptional, voluntary and occasional and does not create any contractual or other right to receive future awards of PSUs, or benefits in lieu of PSUs, even if PSUs have been granted in the past;

(c) all decisions with respect to future PSUs or other grants, if any, will be at the sole discretion of the Company;

(d) you are voluntarily participating in the Plan;

(e) the PSUs and the Shares subject to the PSUs, and the income from and value of same, are not intended to replace any pension rights or compensation;

(f) the PSUs and the Shares subject to the PSUs, and the income from and value of same, are not part of normal or expected compensation or salary for any purpose including, but not limited to, calculating any severance, resignation, termination, redundancy, dismissal, end-of-service payments, holiday pay, bonuses, long-service awards, leave-related payments, pension or retirement benefits or payments or welfare benefits or similar mandatory payments;

(g) unless otherwise agreed with the Company, the PSUs and any Shares acquired under the Plan, and the income from and value of same, are not granted as consideration for, or in connection with, any Service you may provide as a director of a Subsidiary or Affiliate;

(h) the future value of the underlying Shares is unknown, indeterminable and cannot be predicted with certainty;

(i) no claim or entitlement to compensation or damages shall arise from forfeiture of the PSUs resulting from the termination of your Service (for any reason whatsoever whether or not later found to be invalid or in breach of labor laws in the jurisdiction where you are providing Service or the terms of your employment or service agreement, if any); and

(j) neither the Company, the Employer nor any Parent, Subsidiary or Affiliate shall be liable for any foreign exchange rate fluctuation between your local currency and the United States Dollar that may affect the value of the PSUs or the Shares acquired upon settlement of the PSUs or the amount received upon the subsequent sale of any Shares.

8. Data Privacy.

(a) ***Declaration of Consent. By accepting this award of PSUs and indicating consent by signing this PSU Agreement or via the Company's online acceptance procedure, you are declaring that you agree with the data processing practices described herein and consent to the collection, processing and use of Data by the Company and the transfer of Data to the recipients mentioned below, including recipients located in countries which may not have a similar level of protection from the perspective of your country's data protection law.***

(b) ***Data Collection and Usage. The Company and the Employer may collect, process and use certain personal information about you, including, but not limited to, your name, home address and telephone number, email address, date of birth, social insurance number, passport or other identification number, salary, nationality, job title, any shares of stock or directorships held in the Company, details of all PSUs granted under the Plan or any other entitlement to shares of stock awarded, canceled, exercised, vested, unvested or outstanding in your favor ("Data"), for the purposes of implementing, administering and managing the Plan. The legal basis, where required, for the processing of Data is your consent.***

(c) ***Stock Plan Administration Service Providers. The Company transfers Data to E*Trade Corporate Financial Services, Inc. and E*Trade Securities LLC ("Plan Broker"), an independent service provider based in the United States, which is assisting the Company with the implementation, administration and management of the Plan. In the future, the Company may select a different service provider and share Data with such other provider serving in a similar manner. You may be asked to agree on separate terms and data processing practices with the service provider, with such agreement being a condition to the ability to participate in the Plan.***

(d) ***International Data Transfers. The Company and its service providers are based in the United States. Your country or jurisdiction may have different data privacy laws and protections than the United States. For example, the European Commission has issued a limited adequacy finding with respect to the United States that applies only to the extent companies register for the EU-U.S. Privacy Shield program. The Company's legal basis, where required, for the transfer of Data is your consent.***

(e) ***Data Retention. The Company will hold and use the Data only as long as is necessary to implement, administer and manage your participation in the Plan, or as required to comply with legal or regulatory obligations, including under tax and security laws.***

(f) ***Voluntariness and Consequences of Consent Denial or Withdrawal. Participation in the Plan is voluntary and you are providing the consents herein on a purely voluntary basis. If you do not consent, or if you later seek to revoke your consent, your salary from or employment and career with the Employer will not be affected; the only consequence of refusing or withdrawing your consent is that the Company would not be able to grant the PSUs under the Plan to you or administer or maintain your participation in the Plan.***

(g) ***Data Subject Rights. You may have a number of rights under data privacy laws in your jurisdiction. Depending on where you are based, such rights may include the right to (i) request access or copies of Data the Company processes, (ii) rectification of incorrect Data, (iii) deletion of Data, (iv) restrictions on processing of Data, (v) portability of Data, (vi) lodge complaints with competent authorities in your jurisdiction, and/or (vii) receive a list with the names and addresses of any potential recipients of Data. To receive clarification regarding these rights or to exercise these rights, you understand that you can contact your local human resources representative.***

9. **Acknowledgement.** The Company and you agree that the PSUs are granted under and governed by the Notice, this PSU Agreement and the provisions of the Plan. You: (i) acknowledge receipt of a copy of the Plan prospectus, (ii) represent that you have carefully read and are familiar with the provisions in the grant documents, and (iii) hereby accept the PSUs subject to all of the terms and conditions set forth in this PSU Agreement and those set forth in the Notice. You hereby agree to accept as binding, conclusive and final all decisions or interpretations of the Committee upon any questions relating to the Plan, the Notice and this PSU Agreement.

10. **Entire Agreement; Enforcement of Rights.** This PSU Agreement, the Plan and the Notice constitute the entire agreement and understanding of the parties relating to the subject matter herein and supersede all prior discussions between them. Any prior agreements, commitments or negotiations concerning the acquisition of the Shares hereunder are superseded. No modification of or amendment to this PSU Agreement, nor any waiver of any rights under this PSU Agreement, shall be effective unless in writing and signed by the parties to this PSU Agreement. The failure by either party to enforce any rights under this PSU Agreement shall not be construed as a waiver of any rights of such party.

11. **Compliance with Laws and Regulations.** The issuance of Shares will be subject to and conditioned upon compliance by the Company and you with all applicable state, federal and foreign laws and regulations and with all applicable requirements of any stock exchange or automated quotation system on which the Company's common stock may be listed or quoted at the time of such issuance or transfer, which compliance the Company shall, in its absolute discretion, deem necessary or advisable. You understand that the Company is under no obligation to register or qualify the Company's common stock with any state, federal or foreign securities commission or to seek approval or clearance from any governmental authority for the issuance or sale of the Shares. Further, you agree that the Company shall have unilateral authority to amend the Plan and this PSU Agreement without your consent to the extent necessary to comply with securities or other laws applicable to issuance of Shares. Finally, the Shares issued pursuant to this PSU Agreement shall be endorsed with appropriate legends, if any, determined by the Company.

12. **No Advice Regarding Grant.** The Company is not providing any tax, legal or financial advice, nor is the Company making any recommendations regarding your participation in the Plan, or your acquisition or sale of the underlying Shares. You should consult with your own personal tax, legal and financial advisors regarding your participation in the Plan before taking any action related to the Plan.

13. **Governing Law; Venue.** This PSU Agreement, all acts and transactions pursuant hereto and the rights and obligations of the parties hereto shall be governed, construed and interpreted in accordance with the laws of the State of Delaware, without giving effect to principles of conflict of laws. For purposes of litigating any dispute that may arise directly or indirectly from the Plan, the Notice and this PSU Agreement, the parties hereby submit and consent to litigation in the exclusive jurisdiction of the State of California and agree that any such litigation shall be conducted only in the courts of California in Santa Clara County, California or the federal courts of the United States for the Northern District of California and no other courts.

14. **Severability.** If one or more provisions of this PSU Agreement are held to be unenforceable under applicable law, the parties agree to renegotiate such provision in good faith. In the event that the parties cannot reach a mutually agreeable and enforceable replacement for such provision, then (i) such provision shall be excluded from this PSU Agreement, (ii) the balance of this PSU Agreement shall be interpreted as if such provision were so excluded and (iii) the balance of this PSU Agreement shall be enforceable in accordance with its terms.

15. **No Rights as Employee, Director or Consultant**. Nothing in this PSU Agreement shall create a right to employment or other Service or be interpreted as forming or amending an employment, service contract or relationship with the Company and this PSU Agreement shall not affect in any manner whatsoever any right or power of the Company, or a Parent, Subsidiary or Affiliate, to terminate your Service, for any reason, with or without Cause.

16. **Consent to Electronic Delivery and Acceptance of All Plan Documents and Disclosures**. By your acceptance of this award of PSUs, you consent to the electronic delivery of the Notice, this PSU Agreement, the

Plan, account statements, Plan prospectuses required by the U.S. Securities and Exchange Commission, U.S. financial reports of the Company, and all other documents that the Company is required to deliver to its stockholders (including, without limitation, annual reports and proxy statements) or other communications or information related to the PSUs. Electronic delivery may include the delivery of a link to a Company intranet or the internet site of a third party involved in administering the Plan, the delivery of the document via e-mail or such other delivery determined at the Company's discretion. You acknowledge that you may receive from the Company a paper copy of any documents delivered electronically at no cost if you contact the Company by telephone, through a postal service or electronic mail at [ ]. You further acknowledge that you will be provided with a paper copy of any documents delivered electronically if electronic delivery fails; similarly, you understand that you must provide on request to the Company or any designated third party a paper copy of any documents delivered electronically if electronic delivery fails. You agree to participate in the Plan through an on-line or electronic system established and maintained by the Company or a third party designated by the Company. Also, you understand that your consent may be revoked or changed, including any change in the electronic mail address to which documents are delivered (if you have provided an electronic mail address), at any time by notifying the Company of such revised or revoked consent by telephone, postal service or electronic mail at [ ]. Finally, you understand that you are not required to consent to electronic delivery.

17. Insider Trading Restrictions/Market Abuse Laws. You acknowledge that, depending on the laws of applicable jurisdictions, including but not limited to your country and the United States, you may be subject to insider trading restrictions and/or market abuse laws, which may affect your ability to accept, acquire, sell or otherwise dispose of Shares, rights to Shares (*e.g.*, PSUs) or rights linked to the value of Shares under the Plan during such times as you are considered to have "material non-public information" or "inside information" regarding the Company (as defined by the laws or regulations in the relevant jurisdictions). Any restrictions under these laws or regulations are separate from and in addition to any restrictions that may be imposed under any applicable Company insider trading policy. You acknowledge that it is your responsibility to comply with any applicable restrictions, and you should speak to your personal advisor on this matter.

18. Foreign Asset/Account Reporting. You acknowledge that there may be certain foreign asset and/or account reporting requirements which may affect your ability to acquire Shares or hold Shares acquired under the Plan or cash received from participating in the Plan (including from any dividends paid on Shares acquired under the Plan) in a brokerage or bank account outside your country. You may be required to report such accounts, assets or transactions to the tax or other authorities in your country.

19. Language. You acknowledge that you are proficient in the English language and understand the provisions in this PSU Agreement and the Plan. If you have received this PSU Agreement or any other document related to the Plan translated into a language other than English and if the meaning of the translated version is different than the English version, the English version will control.

20. Appendix. Notwithstanding any provisions in this PSU Agreement, this award of PSUs shall be subject to the Appendix if you live or work outside the United States, including any special terms and conditions set forth therein for your country. Moreover, if you relocate to a country other than the United States, then the Appendix, including the special terms and conditions for such country will, apply to you to the extent the Company determines that the application of such terms and conditions is necessary or advisable for legal or administrative reasons. The Appendix constitutes part of this PSU Agreement.

21. Imposition of Other Requirements. The Company reserves the right to impose other requirements on your participation in the Plan, on the PSUs and on any Shares acquired under the Plan, to the extent the Company determines it is necessary or advisable for legal or administrative reasons, and to require you to sign any additional agreements or undertakings that may be necessary to accomplish the foregoing.

22. Waiver. You acknowledge that a waiver by the Company of breach of any provision of this PSU Agreement shall not operate or be construed as a waiver of any other provision of this PSU Agreement, or of any subsequent breach by you or any other Participant.

23. Code Section 409A. For purposes of this PSU Agreement, a termination of employment will be determined consistent with the rules relating to a "separation from service" as defined in Section 409A of the

Code and the regulations thereunder ("***Section 409A***"). Notwithstanding anything else provided herein, to the extent any payments provided under this PSU Agreement in connection with your termination of employment constitute deferred compensation subject to Section 409A, and you are deemed at the time of such termination of employment to be a "specified employee" under Section 409A, then such payment shall not be made or commence until the earlier of (i) the expiration of the six-month period measured from your separation from service from the Company or (ii) the date of your death following such a separation from service; provided, however, that such deferral shall only be effected to the extent required to avoid adverse tax treatment to you including, without limitation, the additional tax for which you would otherwise be liable under Section 409A(a)(1)(B) in the absence of such a deferral. To the extent any payment under this PSU Agreement may be classified as a "short-term deferral" within the meaning of Section 409A, such payment shall be deemed a short-term deferral, even if it may also qualify for an exemption from Section 409A under another provision of Section 409A. Payments pursuant to this section are intended to constitute separate payments for purposes of Section 1.409A-2(b)(2) of the Treasury Regulations.

24. **Award Subject to Company Clawback or Recoupment**. To the extent permitted by applicable law, the PSUs shall be subject to clawback or recoupment pursuant to any clawback or recoupment policy adopted by the Board or the Committee or required by law during the term of your employment or other Service that is applicable to you. In addition to any other remedies available under such policy, applicable law may require the cancellation of your PSUs (whether vested or unvested) and the recoupment of any gains realized with respect to your PSUs.

CERTAIN CONFIDENTIAL INFORMATION IN THIS EXHIBIT HAS BEEN OMITTED AND REPLACED WITH "[…*…]" BECAUSE IT IS NOT MATERIAL AND WOULD BE COMPETITIVELY HARMFUL IF PUBLICLY DISCLOSED.**

Exhibit 10.51

MASTER SUPPLY AND SERVICES AGREEMENT

PREAMBLE

This MASTER SUPPLY AND SERVICES AGREEMENT (this "**Agreement**") is entered into as of December 24, 2021 (the "**Effective Date**") by and between Bloom and Company named below (each, a "**Party**," and collectively, the "**Parties**") to set forth the terms and conditions of the sale of certain solid oxide fuel cell energy Products and ancillary services supporting Company's installation of the Products.

RECITALS

Bloom and Company's parent SK ecoplant Co., Ltd. ("**SK**") intend to separately enter into a cooperation framework agreement establishing the terms for the joint pursuit of certain business opportunities in the United States of America ("**USA**"), including Qualified Projects **[…***…]** (the "**US Targeted Cooperation Framework Agreement**" or "**US CFA**"). For Qualified Projects where Company has been granted the opportunity to perform the EPC Works, Company will purchase and Bloom will sell the Products described in a project-specific purchase order, substantially in the form of Exhibit B (a "**Purchase Order**"). Each Purchase Order is governed by the terms and conditions of this Agreement.

Company will also enter into a separate but related master services agreement with Bloom addressing Bloom's provision of technical and project-support services related to Bloom's sale of Products (the "**Project Services**" and "**Master Services Agreement**" respectively). Commissioning and Product transport services are addressed under this Agreement rather than under the Master Services Agreement and are separate from the Project Services.

Company's affiliate BT FC, LLC (or other Company affiliate as may be required) shall also engage Bloom to provide certain operations and maintenance services for all Systems that include Product under the separate but related Master Operations and Maintenance Agreement (the "**O&M Agreement**").

TERMS & CONDITIONS

Parties	"**Company**" SK E&C BETEK Corporation, a Delaware corporation CSLB # 948628, having its office at 3 Park Plaza, Suite 430, Irvine, CA 92614	"**Bloom**" Bloom Energy Corporation, a Delaware corporation
Notice Information	c/o SK E&C BETEK Corporation 3 Park Plaza, Suite 430 Irvine, California 92614 **[…***…]**	4353 North 1st Street, 4th Floor San Jose, California Attn: General Counsel Email: **[…***…]**

Exhibit A - Definitions
Exhibit B - Form of Purchase Order
Schedule 1 - Insurance

The Preamble, Recitals, Terms & Conditions, Exhibits and Schedules are incorporated in their entirety by reference and made part of this Agreement.

CERTAIN CONFIDENTIAL INFORMATION IN THIS EXHIBIT HAS BEEN OMITTED AND REPLACED WITH "[…*…]" BECAUSE IT IS NOT MATERIAL AND WOULD BE COMPETITIVELY HARMFUL IF PUBLICLY DISCLOSED.**

Exhibit 10.51

IN WITNESS WHEREOF, the undersigned have caused this Agreement to be executed by their duly authorized representatives and delivered as of the date first set forth above.

SK E&C BETEK CORPORARTION	**BLOOM ENERGY CORPORATION**
By:__	By:__
Name:__	Name:__
Title:__	Title:__

Article I. PRODUCT, SERVICES, PRICE, AND PAYMENT

Section 1.01 Product.

(a) Product. The products available for purchase by Company from Bloom are listed in each Purchase Order (the "**Product**").

(b) Product Changes.

(i) Future Products. This Agreement is intended to govern the provision of any new product offerings made available by Bloom to Company during the Term.

(ii) Product Updates. Bloom will have the right to make design improvements to Products from time to time and in its sole discretion.

(iii) Product Specification Updates. Upon any changes to the Product Specifications or any additions to the list of Products, Bloom will deliver to Company the updated Product Specifications or new Product, as the case may be. Notwithstanding the foregoing, following execution of a Purchase Order for a Product, Bloom will not, without Company's prior written consent, make design modifications to the Products set forth in such Purchase Order that represent a material change to such Products' form, fit, or function.

(c) Custom Product. To the extent a specific product or configuration is not yet available as a "Product" but Bloom is willing to sell such product to Company (a "**Custom Product**"), the Parties may negotiate a purchase price for such Custom Product and the terms of required Services in accordance with Section 4.02.

(d) Supply-Chain Management for Products. No later than **[…***…]** Business Days before the expiration of each fiscal quarter, Company will deliver to Bloom a Quarterly Forecast. After Bloom's receipt and review of the Quarterly Forecast, Bloom and Company will meet (which meet may be done by teleconference) to discuss Bloom's timing requirements for manufacture and delivery.

Section 1.02 Product Price.

(a) The purchase price of each Product is set forth in the applicable Purchase Order (the "**Product Price**"). The Product Price will be in United States dollars, unless provided otherwise in the Purchase Order.

(b) The Product Prices are exclusive of all taxes, duties or excise fees and all costs of shipment and delivery; provided that estimated taxes, duties, excise fees, and shipping covered by the applicable Incoterms in the Purchase Order are part of the Total PO Price as set forth in the Purchase Order.

(c) If the sale of the Product is exempt from sales tax and Company has provided Bloom with a tax exemption and reseller certificates acceptable to the tax authority, the sales tax will be excluded from the Total PO Price.

Section 1.03 Services.

(a) The only Services to be provided and performed by Bloom under this Agreement are Commissioning, initial Product training (if needed), and those activities related to or otherwise supporting Product transport and delivery (the "**Services**"). All other services, if any, will be provided and performed under the Master Services Agreement (before and up to COD) or the O&M Agreement (after COD).

(b) All Services, Handling Fees, and other reimbursable costs and expenses will be billed on a Time and Materials basis in accordance with the terms of this Agreement, unless otherwise specified in the Purchase Order and mutually agreed by the Parties. Services fees s are inclusive of all sales, use, excise, import, export, re-export, and other taxes or charges (including any interest and penalties), now or hereafter imposed by any governmental body or agency upon any materials, supplies, equipment, or services provided by Bloom as Services, as well as all unemployment compensation insurance, old age benefits, social security, or any other taxes upon the wages of Bloom's employees.

(c) Bloom will use reasonable skill and judgement in the preparation of estimates and schedules for the cost and time needed to perform Services; *provided*, Bloom does not warrant or guarantee the accuracy of any such estimates or schedules. Estimates and schedules will be specific to individual Purchase Orders and included in the corresponding Purchase Orders. Notwithstanding the foregoing, if Bloom has provided Company with a Not to Exceed estimate ("NTE"), Bloom will honor the NTE and only perform Services up to the value of the NTE pending further agreement with Company regarding continued Services under the relevant Purchase Order.

Section 1.04 Purchase Orders.

(a) Company may order the Products and Commissioning from Bloom through the submission of a Purchase Order. Company shall issue a Purchase Order to Bloom without specifying a Need-by-Date within **[…***…]** Business Days of the date that : (i) Bloom (or any of its affiliates) assigns to Company (or any of its affiliates) the related Energy Services Agreement or other Off-Taker agreement; or (ii) Company directly signs an Off-Taker agreement; provided that Company must provide to Bloom a **[…***…]** prior notice of the Need-by-Date for the applicable Purchase Order, provided, however, that in the case of any project under **[…***…]**, the notice period shall be **[…***…]**. Company may the delay the Need-by-Date once, as further detailed in Section 2.02. Purchase Orders are governed by the terms of this Agreement, however, in the event of a conflict between the provisions of this Agreement and a Purchase Order, the provisions of the Purchase Order will govern. Capitalized terms used in this Agreement and not otherwise defined in this Agreement are defined in the Purchase Order.

(b) Company will issue a separate Purchase Order for each Site. The Promise Date and Need-by-Dates in each Purchase Order will be determined on a case-by-case basis.

(c) All Commissioning and other Service requests must be set forth in writing and incorporated into a Purchase Order. Based on the Services requested, Bloom will provide the estimates and schedules addressed in Section 1.03, above.

(d) Upon agreement of the terms of the Purchase Order, each Party will execute and deliver the Purchase Order. A Purchase Order is not binding until it is executed and delivered by both Parties and neither Party is obligated to execute a Purchase Order.

(e) A Purchase Order may only be amended in writing by both Parties.

(f) A Purchase Order may not be cancelled once executed by the Parties, except: (i) in accordance with Section 13.02 (*Termination for Cause*) or (ii) in the event that a Force Majeure Event causes the cancellation of the Qualified Project or Company's participation in such Qualified Project for which the Purchase Order was issued, but in no event may a Purchase Order be cancelled after delivery of the Product under the subject Purchase Order.

Section 1.05 Invoices; Payment Terms.

(a) Bloom will invoice Company for the Total PO Price in accordance with the payment schedule set forth in the Purchase Order.

(b) Each invoice will reference the Purchase Order number. For Services: (i) Company will review the invoice within **[…***…]** days from the date that Company receives the subject invoice; (ii) no later than the **[…***…]** day following receipt of the subject invoice, Company shall submit to Bloom

Company's written approval of the subject invoice, or part thereof, and its detailed written explanation of all disputed amounts; and (iii) no later than the **[…***…]** day following its receipt of the subject invoice, Company shall pay to Bloom all undisputed amounts. If Company fails to approve any invoice within the period hereof, such invoice shall be deemed approved and the full amount of the invoice shall be paid no later than the **[…***…]** day following Company's receipt of the subject invoice. Following Company's submission of any notice of disputed amounts, the Parties shall promptly meet to confer in good faith regarding the basis for Company's dispute and seek to resolve the dispute prior to the payment due date. All disputed amounts that are resolved shall be paid to Bloom within **[…***…]** days of the resolution and Bloom reserves all rights with respect to unpaid amounts. The invoice payment term for Product is **[…***…]** days from the date of Product delivery, unless otherwise specified in the Purchase Order. Company shall pay all undisputed invoices by no later than the invoice due date. If Company fails to make any payment when due, Bloom may, at its option and without prejudice to its other remedies, suspend performance, defer delivery or seek remedies available at law or in equity without liability to Bloom.

(c) Company's payment obligations under this Agreement are non-cancellable and any payments made hereunder are irrevocable and non-refundable.

(d) Interest will automatically begin to accrue daily on any overdue and unpaid sums at the lesser of **[…***…]** per month or the highest rate permissible by Applicable Law.

(e) In addition to its other rights, if Bloom has reasonable grounds for insecurity with respect to Company's performance under this Agreement, then Bloom may request adequate assurance of due performance and until such assurance is received may suspend further performance for which Bloom has not yet been paid as well as exercise any further rights or remedies available under Section 2-609 of the Uniform Commercial Code. Company shall pay all costs incurred by Bloom in accordance with such suspension (including storage costs) upon Bloom's submission of its invoices.

Section 1.06 Exclusivity. Company agrees that it will not purchase any other solid-oxide fuel cell system from any other supplier.

Article II. PRODUCT DELIVERY AND ACCEPTANCE

Section 2.01 Delivery.

(a) Unless provided otherwise in the Purchase Order, the Product will be delivered **[…***…]** on or before the Need-by-Date specified in the applicable Purchase Order. Subject to Section 2.02, any request from Bloom to deliver the Products to a Named Place other than Site must be submitted in writing to Company for Company's approval before the subject Purchase Order is issued or, if the Purchase Order has already been issued, promptly upon Bloom's determination of its need for a new Named Place. If the Parties agree that the Product may be delivered in parts over multiple shipments, then Bloom agrees to deliver the Products **[…***…]**. Multiple loads delivered on the same day shall not be deemed to be "delivery in parts" and separate agreement between the Parties regarding delivery in parts is not required. Any and all costs related to delivery of the Products (including carriage, insurance, and all related Services) shall be paid to Bloom if the costs have been included in the project-installation budget and reflected in the Purchase Order. If additional costs related to delivery of the Product (including storage and warehousing services) are incurred by Bloom due to any delivery delays attributable to Company, then those additional costs will be invoiced to and paid by Company as an additional Service regardless of whether such additional costs were included in the project-installation budget.

(b) If Bloom has obtained a prior written consent from Company subject to Section 2.01 (a) above, the Parties agree to discuss in good faith the scope of the Services related to storage, handling, and transport from the Named Place to the Site, insurance coverage, and the costs related to these Services (including Handling Fees) and insurance. . Title and risk of loss for the Product remains with Company from delivery to the Named Place and during transport from the Named Place to the Site and unloading at the Site will be performed by Company. Bloom shall be named as an additional insured on all Company-procured insurance policies.

(c) Upon Bloom's delivery of Product at Site, Company shall unload, or cause to be unloaded, the Product from each delivery truck or other mode of transportation within **[...***...]** hours of delivery. If Company fails to unload the Product within the applicable time for any reason attributable to Company, Company shall pay Bloom the applicable demurrage costs to the extent Bloom is assessed any such demurrage costs by the transportation provider.

(d) Company shall be responsible for providing customary lifting and rigging tools for use by Company in the unloading process. From and after delivery at Site or the Named Place subject to Section 2.01(b) Company shall protect and secure the Product from damage.

(e) Bloom reserves the right to make shipments at any time up to **[...***...]** days prior to the Need-by-Date in the Purchase Order, provided, however, that Bloom shall provide notice to Company in writing no later than **[...***...]** days prior to the Need-by-Date regarding its anticipated early-delivery. If Company cannot accommodate the early delivery, the Parties will promptly meet to confer and agree on interim measures to accommodate Bloom's early delivery. Bloom will promptly notify Company if it expects a given delivery of Product to be delayed. If only a portion of the Product is available for shipment to meet the Need-by-Date, Bloom shall notify Company and, unless Company instructs otherwise ship the available Products consistent with the planned delivery date. **[...***...]**.

Section 2.02 Rescheduling. Company may reschedule the Need-by-Date once by up to **[...***...]** days upon written notice delivered to Bloom at least **[...***...]** days before the original Need-by-Date and such notice shall advise of the proposed new Need-by-Date. Company will pay Bloom any increase in costs of freight and other related additional Handling Fees and Services related to the rescheduling, regardless of whether such additional costs were included within the project budget. Company shall be ready for Bloom's Product delivery on the Need-by-Date set forth in the subject Purchase Order, including where adjusted by the foregoing terms. If Company is not ready for delivery within **[...***...]** Days of the Need-by-Date, then Company shall so notify Bloom and shall submit a plan for accepting the delivery at an agreed warehouse destination. If, within **[...***...]** Days of scheduled delivery, Company provides notice to Bloom that Company will be ready to accept the subject delivery at the original Named Place on the Need-by-Date, then the Product will be delivered according to the Purchase Order. If, however, Company does not provide such notice to Bloom or further notifies Bloom that Company will not be ready to accept delivery in accordance with the Purchase Order terms, then the subject Product will be delivered **[...***...]** to the approved warehouse (a new Named Place) at Company's sole cost and risk and under insurance coverage procured by Company naming Bloom as an additional insured. In such event, Product delivery shall be deemed to have been made at: (i) the Named Place prior to loading if that Named Place was Bloom's premises; or (ii) if the Named Place is not Bloom's premises, then upon arrival and ready for unloading at the warehouse ship-to address. The Parties will agree on arrangements for re-loading, transport, and other handling, all at Company's expense, from the subject warehouse to the Site and Company shall maintain risk of loss and procure insurance coverage for all transport and storage arising from the delivery-delay mitigation efforts set forth in this Section 2.02.

Section 2.03 Packaging. Bloom will preserve, pack, package, and handle the Products to protect them from loss or damage and in accordance Prudent Industry Practice. Bloom will be liable for and shall promptly refund to Company the amount of any loss or damage due to Bloom's failure to properly preserve, pack, and package or handle such Products. All components manufactured outside the US shall be marked in compliance with all applicable international and U.S. trade laws, and must be clearly marked, in English, with the country of origin.

Section 2.04 Export/ Re-Export / Transfer. Company may not export, re-export or transfer Bloom Product from the USA or from any foreign location to another country or location for any reason without Bloom's express written authorization.

Section 2.05 Trade Controls. The Products are specifically subject to U.S. Export Administration Regulations. Bloom and Company agrees to strictly comply with all export, re-export, transfer, transshipment, and import restrictions and regulations of the Export Administration Regulations (EAR), Department of Commerce (DOC), U.S. Customs and Border Protection (CBP), other Partner Government Agencies (PGAs) or other Regulatory Agencies of the United States or the Territory or other applicable countries, and not to transfer, or authorize the transfer of, directly or indirectly, the Products or any direct product thereof to a prohibited country or otherwise in violation of any such restrictions or regulations. Company agrees to ensure that the Products provided hereunder are only installed in the USA. Company's failure to comply with this Section 2.05 is a material breach of this Agreement. Company shall not export, re-export, resell, ship or divert, directly or indirectly, any Product or other Bloom IP in any form, including any technical data furnished hereunder, to any country except as the laws of the United States of America or other Applicable Laws expressly permit, including where required obtaining in advance any export license or other governmental approval. This obligation will survive termination of this Agreement.

Section 2.06 Product Inspection. At Named Place, Company or its designated agents will visually inspect the Product. No later than **[...***...]** hours after such inspection, Company will notify Bloom in writing of (i) either any cosmetic or other visually identifiable defects in the Product, (ii) any quantity or type that does not correspond to the quantity, type, or price to that itemized in the shipping invoice or documentation, or (ii) its acceptance of the Product. If Company has not given notice within such time period, the Product will be deemed accepted by Company upon expiration of the inspection period described above. In the event Company identifies any defects, upon receipt of written notice thereof, Bloom will promptly repair or replace such Product. Company's identification of Product defects shall not be deemed a rejection of the Products or a revocation of its acceptance and Bloom's prompt repair or replacement shall be Company's sole remedies for defective or otherwise non-conforming Products.

Section 2.07 Title and Risk of loss.

(a) Title and risk of loss to the Product or any portion thereof will pass to Company, free and clear of liens and encumbrances other than any liens or encumbrances that arise from any due and unpaid liabilities of Company under this Agreement, upon delivery in accordance with Section 2.01 (*Delivery*).

(b) Title to the Product expressly excludes and does not convey (i) any Bloom IP or (ii) any right to engage in a Prohibited Activity.

(c) Company hereby grants a security interest to Bloom in and to the Product furnished under a Purchase Order to secure Company's payment of the Total PO Price in full. Upon payment in full of the Total PO Price for the Product, Services and other reimbursable costs and expenses set forth in a Purchase Order, the security interest granted under this Section 2.07(c) will be automatically released. Company authorizes Bloom to file any financing statement or other evidence of the Bloom's security interest with any state or local jurisdiction to perfect its security interest.

Article III. PRODUCT WARRANTIES

Section 3.01 Manufacturer's Warranty.

(a) Bloom warrants to Company that (i) the Product will be new and unused and free from any defects in materials and (ii) it will adhere to all aspects of the applicable Product Specifications (the "**Manufacturer's Warranty**"). The term of the Manufacturer's Warranty commences on the date the Product is accepted until the earlier to occur of (i) **[...***...]** and (ii) **[...***...]**.

(b) The Manufacturer's Warranty does not include remedies for defects or damages (i) caused by normal wear and tear during normal usage, (ii) that were visually identifiable but not identified at acceptance, (iii) caused by improper or insufficient design or installation of the System or improper maintenance, (iv) caused by a Force Majeure Event or a Grid Event, (v) that arise due to the failure of a representation of Company in this Agreement to be true when made, (vii) caused by Company's failure to install the System of which the Product is a part in accordance with the Supplier Standards or Applicable Law, (viii) caused by Company Equipment, or (ix) caused by Misuse.

(c) To the extent that any products, equipment, systems or materials are incorporated into the installation of a System which are not Product, such materials will be covered by the warranty of the manufacturer or vendor thereof, not Bloom. The Manufacturer's Warranty does not cover any other goods except the Product.

(d) Upon receipt of written notice from Company of a claim under this Manufacturer's Warranty, unless Company provides written acceptance of the condition, Bloom will correct the defect by, at its option, repairing or replacing the defective Product at no additional cost to Company. This is Company's sole remedy for the failure of the Product to meet the requirements of the Manufacturer's Warranty. Warranty repair or replacement will not extend or renew the Warranty Period. If, during the Warranty Period, Company discovers a defect and does not promptly notify Bloom or give Bloom an opportunity to test or correct such defect as reasonably requested by Bloom, Company waives the Bloom's obligation to repair or replace such defective Product as well as the right to claim a breach of the Manufacturer's Warranty in connection with such defect.

Section 3.02 Infringement Warranty.

(a) Bloom warrants to Company that neither the Product nor any part thereof directly infringes on a valid, registered patent, copyright, or trademark of any third party in effect in the U.S. (the "**Infringement Warranty**"). The term of the Infringement Warranty commences on the date of delivery and, subject to the terms set forth therein, continues throughout Company's possession of the Product.

(b) The Infringement Warranty does not cover Infringement Claims arising from (i) any combination made by Company of the Product with any other product or products, unless the combination is in accordance with Bloom's specifications or made at the written request of Bloom; (ii) any changes made to the Product, Product design or requested on a custom basis, in each case by Company; or (iii) a counterclaim in a litigation instigated by Company against the third party of such Infringement Claim.

(c) If Company receives notice of an Infringement Claim with respect to the Product, it will process the claim in accordance with Section 12.01(c) (*Indemnification*).

(d) Should Company be enjoined from using the Product or any portion thereof as a result of an Infringement Claim, Bloom will, at its own expense, carry out, at its sole option and discretion, one of the following remedies:

(i) procure or otherwise obtain for Company the right to own or use the Product or the portion thereof;

(ii) modify the Product so that it becomes non-infringing but still substantially meets its original functional specifications;

(iii) replace the Product with a non-infringing solid oxide fuel cell Product that substantially meets its original functional specifications; or

(iv) repurchase the infringing Product for an amount equal to the Product Price, depreciated over the term of years the Product was used.

(e) **Sole Remedy**. The remedies under Section 3.02(d) are Company's sole remedy and Bloom's exclusive liability for any claims arising out of the Infringement Warranty.

Section 3.03 Disclaimers. EXCEPT AS EXPRESSLY SET FORTH IN THE MANUFACTURER'S WARRANTY AND THE INFRINGEMENT WARRANTY, (I) THE PRODUCT IS TRANSFERRED "AS IS, WHERE IS" AND (II) BLOOM EXPRESSLY DISCLAIMS ANY AND ALL OTHER WARRANTIES, CONDITIONS OR GUARANTIES, EXPRESS, STATUTORY, OR IMPLIED, WRITTEN OR ORAL, OF ANY KIND OR NATURE, INCLUDING ALL WARRANTIES OF MECHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OTHERWISE, OF THE PRODUCT UNDER THIS AGREEMENT. NO PERSON IS AUTHORIZED TO MAKE ANY OTHER WARRANTY OR

REPRESENTATION CONCERNING THE PRODUCT. IF COMPANY ENGAGES IN A PROHIBITED ACTIVITY, THE MANUFACTURER'S WARRANTY AND THE INFRINGEMENT WARRANTY WILL BE VOIDED.

Article IV.
TRAINING SERVICES & ROLES AND RESPONSIBILITIES

Section 4.01 Training. Before Company installs the first System purchased under this Agreement, Bloom will provide an orientation pursuant to which one or more Engineering Representatives of each Party will meet for a period of at least one day to review the requirements of design and construction of a System. Each Party will bear its own costs and expenses in connection with the orientation.

Section 4.02 Custom Product. If Company orders a Custom Product, it will be required to engage a technical advisor under the Master Services Agreement. The Parties will work in good faith to plan the involvement and estimated hours of such technical advisor before the Product is shipped and the Parties will execute a Purchase Order under the Master Services Agreement for the technical advisor's engagement.

Section 4.03 Roles and Responsibilities. Before Company commences the installation of a System, Bloom will deliver to Company a single-line drawing clearly marked to delineate the bounds of the System and the Company Equipment. Bloom will perform the Bloom obligations that are expressly set forth in the relevant Purchase Order. Company will perform all of the remaining obligations required to design, procure, and install the System

Section 4.04 Change Control. If Company plans to deviate from any requirement in the Supplier Standards after such requirement has been verified by Bloom, it will notify Bloom and get consent to such change in accordance with the processes set forth in the Supplier Standards.

Section 4.05 Standard of Service Performance. Services will be performed in accordance with this Agreement and respective Purchase Order; *provided, however*, (i) Bloom neither warrants the accuracy of any conclusions or recommendations of any Bloom employee nor that a desired objective will result from the provision of any Services and (ii) Company will not rely on any advice, analysis, or work product of any Bloom employee. If Company decides to follow guidance of any Bloom employee, whether written or oral, it does so at its sole risk and discretion.

Section 4.06 Definitive Documentation. In the event there is any dispute between the Parties with respect to the accuracy or agreement of single-line drawing defining the System and the Company Equipment or any other information shared between the Parties, the Parties will work in good faith to remedy such inaccuracy or misunderstanding.

Article V.
COMMISSIONING

Section 5.01 Conditions to Commissioning.

(a) No Person other than Bloom may Commission a System that includes Product.

(b) Company will request that Bloom commence Commissioning in accordance with Section 5.01 (c) when the following conditions precedent have been met (the "**Commissioning Conditions**") and Bloom is not obligated to commence Commissioning until the Commissioning Conditions have been fulfilled:

(i) the Company Equipment and System have been clearly identified and agreed upon by both Parties in a single-line drawing;

(ii) the installation of the System was done in compliance with Applicable Law, and the Supplier Standards;

(iii) the installation meets each of the criteria for Commissioning set forth in the Supplier Standards;

(iv) any deviation from the Supplier Standards has been verified and confirmed in writing by both Parties in accordance with the process set forth therein and Company has performed corrective action necessary to meet the Supplier Standards;

(v) Company has obtained all necessary Governmental Approvals and Third-Party Consents required to Commission the System, except UL requirements related to the Product;

(vi) Company has delivered the Documentation to Bloom, which is reasonably necessary to demonstrate its compliance with the foregoing Commissioning Conditions, to extent not already delivered; and

(vii) Bloom has the access required to the Site in accordance with Section 6.02 (*Company Obligations*).

(c) If Company believes it has satisfied the Commissioning Conditions, it will request that Bloom begin Commissioning the System on a specific day by means of written notice that is at least the number of days established by the Commissioning Notice Period set forth in the applicable Purchase Order. Company may reschedule the requested commencement of System Commissioning after delivery of written notice so long as it reimburses Bloom for any reasonable and documented expenses incurred by Bloom in connection with such delay, including accommodation and travel.

Section 5.02 Commissioning.

(a) Subject to Company's satisfaction of the conditions set forth in Section 5.01, Bloom will commence System Commissioning on the date set forth in the notice from Company requesting commencement of System Commissioning. Bloom shall have the number of days established in the relevant Purchase Order to complete the Commissioning ("**Commissioning Period**"). Upon successfully Commissioning the System, Bloom will deliver a notice of COD to Company.

(b) During the Commissioning phase, Bloom, in coordination with Company, shall conduct all Commissioning tests that are scheduled in the Purchase Order. Bloom shall provide no less than **[…***…]** days' advance notice to Company of any scheduled test(s), and Company shall have right to be present at any or all such test conducted by Bloom. If Company or its subcontractors must be on Site for any of the Commissioning tests, then any impact caused by Contractor's or its subcontractor's unavailability to Bloom's ability to perform Commissioning shall entitle Bloom to an equivalent extension of time to complete the Commissioning.

(c) If Bloom fails to Commission the System in accordance with the requirements set forth in the applicable Purchase Order, Bloom will re-perform the Commissioning as soon as is practicable, but in no event later than: (i) if replacement of any part (excluding FRUs) is required, **[…***…]** later; and (ii) if replacement of one or more FRUs is required, **[…***…]** later. **[…***…]**.

(d) If Bloom's failure to Commission the System under Section 5.02(b) is due to the installation of the System failing to satisfy any Commissioning Condition, Misuse, or Company Equipment, Company will reimburse Bloom for any reasonable expenses incurred by Bloom in connection with re-performing the Commissioning, including Service fees, travel, accommodation, and any Handling Fees in connection with the replacement of parts. If Bloom's failure to Commissioning System is due to Company Equipment, it will be Company's sole responsibility to repair or replace such Company Equipment as required.

Section 5.03 Reliance. Except as set forth in Section 5.02(b), Bloom expressly disclaims any representation or warranty arising out of its review of the Commissioning Conditions or its Commissioning of a System and Company expressly disclaims that is relying on Bloom's review of its compliance with the Commissioning Conditions or its Commissioning of a System.

Article VI. OBLIGATIONS OF THE PARTIES

Section 6.01 Manufacturing Standards. Bloom will:

(a) manufacture the Products in conformance with the Product Specifications;

(b) provide any Service in accordance with Applicable Law and Prudent Industry Practices and take all necessary and reasonable safety precautions pertaining to the health and safety of natural persons and property; and

(c) keep the Product free and clear of all liens other than any lien that (a) arises from any due and unpaid liabilities of Company under the Purchase Order or (b) exists with the consent or approval of Company.

Section 6.02 Company Obligations.

(a) As a condition to Bloom's performance of Services, including Commissioning, Company will take all actions necessary to ensure that Bloom has access to the Site, designs, drawings, and information as Bloom may require and Company hereby grants to Bloom a license containing all the rights necessary for Bloom to access the System and use or occupy the Site to Commission the System, including ingress and egress rights to the Site for Bloom and its employees and Subcontractors (the "**Site License**").

(b) Company shall be solely responsible for safety precautions and shall implement and administer a safety and health program to be performed at each Site. Company will (i) take all actions necessary to provide a safe work environment in accordance with Applicable Laws and (ii) take all reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage, injury, or loss to any Bloom personnel, and any property of Bloom at the Site.

Section 6.03 Global Standards

(a) Each Party represents warrants that in performance of this Agreement, it and its Bloom Persons or Company Persons, as the case may be, have complied with or will comply with:

(i) all Applicable Law and ordinances including those governing environmental, health and safety; and

(ii) Bloom Energy's Global Business Partner Standards, available at bloomenergy.com/supplychain, as may be updated from time to time.

(b) Company warrants that all labor, work and services, if performed at facilities owned, operated, leased, or controlled by Bloom shall be performed in accordance with Bloom's policies governing such facilities.

(c) Compliance. Each Party warrants that the performance of its obligations under this Agreement shall be performed in compliance with, and conform in all respects to, all Applicable Law.

(d) Anti-Corruption. Each Party and its respective Covered Representatives acknowledge that they are subject to the U.S. Foreign Corrupt Practices Act, as well as other similar international, national, state, provincial and local anti-corruption and anti-bribery laws (the "**Anti-Corruption Laws**"). The Anti-Corruption Laws make it unlawful for either Party or its respective Covered Representatives or anyone acting on its behalf, to offer, pay, promise to pay or authorize the payment of any money, gift, entertainment or anything of value to any Government Official (as defined below) for the purpose of obtaining or retaining business or securing any improper advantage for such Party. "**Government Official**" includes:

(i) Employees, directors, officers and agents of a business that is owned or controlled (whether in full or in part) by a government, such as a government energy company, refinery, airline, university or newspaper;

(ii) Employees, officials, and agents of public international organizations such as the World Bank, European Union, and the United Nations;

(iii) All officials, employees, agents, and representatives of any branch or level of government (executive, legislative or judicial and whether national, state or local) or of any government department or agency (including advisers to such agencies and branches), such as the employee of an agency responsible for regulating Bloom Energy installations or services;

(iv) Any political party official, employee or agent of a political party, or candidate for political office (or political party position); and

(v) Any family member or representative of any of the above.

(e) Certificate of Compliance. Either Party will, upon request, promptly execute and provide the other Party with a Certificate of Compliance certifying that (i) such Party has read and understands the Anti-Corruption Laws and Bloom Energy's Global Business Partner Standards; (ii) such Party is in compliance with all Applicable Law in the performance of its obligations under this Agreement; (iii) such Party and its Covered Representatives have not paid, will not pay, have not offered, will not offer, have not given, and/or will not give, anything of value to any: (A) Government Official or to any other person with the knowledge that the payment, promise or gift, in whole or in part, would be passed on to a Government official; or (B) existing or prospective customer (whether or not owned or controlled by a government) to influence an official act or decision or would assist either Party to secure an improper advantage or to obtain or retain business or direct business to any other person or entity; or (iv) such Party and its Covered Representatives will otherwise comply with the Anti-Corruption Laws and Bloom Energy's Global Business Partner Standards imposing obligations on Company in connection with this Agreement.

Section 6.04 Cooperation. Each Party will, in a timely manner not reasonably likely to affect the schedule of or the other Party's performance of the obligations contemplated by this Agreement, and at its own expense provide, or cause to be provided to the other Party, any other information, documentation, consents, services and materials reasonably requested by such Party necessary for it to perform its obligations under this Agreement and provide such other commercially reasonable cooperation as the other Party may request in the performance of its respective obligations under this Agreement. Neither Party will condition or delay its cooperation in a way that could be reasonably expected to impair the other Party's ability to perform its obligations under this Agreement.

Section 6.05 Force Majeure Events.

(a) Neither Party shall be liable, nor be deemed to be in violation of this Agreement, for any delay or failure in performance resulting from a Force Majeure Event or, with respect to Bloom, acts or omissions of Company or any Company Person; provided that the Party claiming relief will promptly (i) notify the other Party in writing of the existence of the Force Majeure Event, (ii) exercise commercially reasonable efforts to minimize delay or damage caused by the Force Majeure Event, (iii) notify the other Party in writing of the cessation of the Force Majeure Event, and (iv) resume performance of its obligations under this Agreement as soon as practicable thereafter. Neither Party may claim a Force Majeure Event based upon its financial inability to perform any of its obligations hereunder.

(b) In the case of a delay due to a Force Majeure Event affecting a Party, any period provided for performance by such Party of its obligations under a Purchase Order, other than the obligation of payment, will be extended on a day-for-day basis for the period of time such performance was so delayed.

Article VII. REPRESENTATIONS

Section 7.01 Mutual Representations. Each Party represents to the other Party that as of the Effective Date and each Order Date, it is duly organized, validly existing and in good standing; and that its execution, delivery and performance of this Agreement and each Purchase Order: (i) has been duly authorized by all necessary acts; (ii) constitutes its legal, valid and binding obligation enforceable against such Party; and (iii) does not and will not violate or constitute a breach of any provision of such Party's organizational documents, Applicable Law, any other agreement to which such Party is bound.

Article VIII. RESALE TERMS AND CONDITIONS

Section 8.01 Resale. Company may sell the Product purchased under this Agreement as part of a System to an Off-Taker so long as such sale complies with the provisions of Section 8.02 (*Offtaker Conditions*).

Section 8.02 Offtaker Conditions.

(a) Company will not sell or re-sell any Product to a Competitor. If Company proposes to sell Product, Company shall provide Bloom with written notice of the terms of such sale, including the name of the proposed Off-Taker. Bloom will, within ten (10) Business Days, confirm if such person or entity is a Competitor. If the proposed purchaser of the Product is the Off-Taker listed in the Purchase Order, such Off-Taker will be deemed automatically approved under this Section 8.02(a).

(b) Any sale agreement between Company and an Off-Taker for Product will (i) expressly prohibit the Off-Taker from any Prohibited Activity, (ii) provide that any violation of a Prohibited Activity by such Off-Taker will render any warranties or guaranties provided by Company to such Off-Taker that are made by Bloom under this Agreement or the O&M Agreement, to be null and void, (iii) (A) require that the Off-Taker agree, for the benefit of and enforceable by Bloom, to be bound by the provisions of Article X *(Intellectual Property*) and all the limitations included in Section 12.02 (*Limitations on Liability*) or (B) indemnify and defend Bloom from and against any and all Claims by, and liability to, any Off-Taker to whom Product is supplied, and (iv) make Bloom a third-party beneficiary of the foregoing terms of this Section 8.02 (*Offtaker Conditions*).

(c) Any purported sale of Product in violation of Sections 8.02(a) or (b) is automatically void.

(d) Notwithstanding Section 8.02(b), any agreement or contract with an Off-Taker for the sale, installation or servicing of a System will be between Company and an Off-Taker, and Bloom shall have no obligation or liability thereunder. Company will be responsible for the performance of all obligations under such an agreement, including obligations with respect to development, permitting, engineering, procurement, and construction. Company shall be solely responsible for the engagement, management and payment of its Subcontractors, and shall be solely responsible for the acts, omissions or defaults of its Subcontractors and their agents, representatives and employees or any other Company Person.

(e) Bloom shall have the exclusive right to conduct all monitoring, control, operations, and maintenance activities as set forth in the O&M Agreement for each System during the life thereof.

Section 8.03 Assignment.

(a) Neither Party may assign this Agreement or any other Project Document without the other Party's prior written consent; provided that (i) Company may collaterally assign the Manufacturer's Warranty and the Infringement Warranty to a lender, equity investor, or Off-Taker for purposes of financing a System and (ii) Bloom may factor, sell, assign or otherwise transfer to any third party any undisputed accounts receivable arising under any Project Document.

(b) Subject to Section 8.03(a), an assigned Project Document will be binding on and will inure to the benefit of the successors and permitted assigns of the Parties; *provided*, that any assignee must assume all of the rights, obligations, terms and conditions of such Project Document in full. An assignment of this Agreement not in compliance with the foregoing is null and void.

(c) Nothing in this Section 8.03 will restrict Bloom from subcontracting portions of its work under any Project Document, provided that Bloom remains at all times responsible for its subcontractors' work as if it had been performed by Bloom.

Article IX. INSURANCE

Section 9.01 Required Insurance. Bloom and Company will each maintain the insurance coverages described in Schedule 1 in full force and effect throughout the Term either through insurance policies or acceptable self-insured retentions.

Section 9.02 Unavailability of Insurance. If any insurance required to be maintained by either Party hereunder ceases to be available on commercially reasonable terms in the commercial insurance market, such Party shall provide written notice to the other Party, accompanied by a certificate from an independent insurance advisor of recognized national standing, certifying that such insurance is not available on commercially reasonable terms in the commercial insurance market for fuel cell generating plants of similar type, geographic location and design. Upon receipt of such notice, that Party shall use commercially reasonable efforts to obtain other insurance that would provide comparable protection against the risk to be insured, and the other Party shall not unreasonably withhold its consent to modify or waive such requirement.

Article X. INTELLECTUAL PROPERTY

Section 10.01 Intellectual Property Ownership. As between Bloom and Company, Bloom retains all right, title and ownership in and to all Bloom IP. Except as expressly set forth in Section 10.02 (*Licensing*), no license to or ownership of Bloom IP is granted to Company under this Agreement or any Purchase Order. Without limiting Section 10.03 (*Restrictions on Use*), to the extent any Intellectual Property constituting improvements or updates to, or derivative works of, Bloom IP, or otherwise relating to the Product or Services, is jointly developed by the Parties during the Term, Company hereby assigns to Bloom all its right, title and interest in any such jointly-developed Intellectual Property, and shall, at Bloom's request, execute and deliver any and all documentation necessary to effect or perfect such assignment. Company acknowledges that Bloom's trade secrets include at least any technology, item, material, information, equipment, communications, data or thing that would be considered to be a trade secret to the fullest extent of the law under either the Uniform Trade Secrets Act, the Defend Trade Secrets Act, or other Applicable Law (whichever law provides the maximum protection for Bloom trade secrets), that Bloom has taken all reasonable and necessary steps to maintain the confidentiality of its trade secrets, and that, as between Company and Bloom, Bloom owns proper legal and equitable title to all such trade secrets. Company waives any argument that any such Bloom trade secrets are in any way not eligible for trade secret protection and agrees not to file any action (and shall not directly or indirectly support or be involved in any such action) in any court or agency which in any way attack the validity, enforceability, ownership, or protectability of any Bloom IP (including trade secrets), Bloom Confidential Information, or other proprietary Bloom information.

Section 10.02 Licensing.

(a) Licenses. Bloom grants to Company during the Term (i) a limited, non-assignable, non-sublicensable, non-exclusive, royalty-free license to use the Bloom IP contained in the Product, including any software, firmware or hardware made part thereof (the "**Limited License**") and (ii) a limited, non-exclusive, royalty-free, irrevocable license to use any third-party software (the "**Third-Party License**") contained in the Product, in each case necessary for the purchase and use of the Product.

(b) Disclaimers. Company will not use the Limited License or the Third-Party License (collectively, the "**Licenses**") for any purpose other than as expressly provided herein. Company uses the Licenses at its own risk. EACH LICENSE IS PROVIDED "AS IS" AND WITHOUT ANY WARRANTY OF ANY KIND, AND BLOOM EXPRESSLY DISCLAIMS ALL WARRANTIES, CONDITIONS AND GUARANTEES IN CONNECTION

WITH ANY LICENSE, WHETHER WRITTEN, ORAL, EXPRESS, IMPLIED OR STATUTORY, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IF COMPANY ENGAGES IN ANY PROHIBITED ACTIVITY, THE LIMITED LICENSE IS AUTOMATICALLY VOID.

Section 10.03 Restrictions on Use. Company shall not, nor shall any Company Person, do any of the following (each, a "**Prohibited Activity**"):

(a) Disassemble, translate, decompile or "unlock", decode or otherwise reverse engineer, or attempt in any manner to reconstruct or discover, any part of the Bloom IP.

(b) Modify, copy, adapt, enhance, or create a derivative work of, or use any Bloom IP to develop or manufacture a product similar to, any Bloom IP;

(c) Open the covering, access the interior, or give others the opportunity to open the covering or access the interior, of any Product or any part of the Product. Only Bloom and its authorized representatives may open or access such interior;

(d) Remove any proprietary notices, labels, or marks on any Bloom IP;

(e) Use any Bloom IP except in accordance with the terms of the Limited License and as otherwise expressly set forth in this Agreement; or

(f) Use or permit others to use the Products, in whole or in part, for application in connection with any nuclear facility or activity.

Article XI. CONFIDENTIAL INFORMATION

Section 11.01 Confidentiality. Each Party shall treat all Confidential Information of the other Party as confidential and shall not use, distribute, disclose, reproduce or otherwise communicate any Confidential Information of the disclosing Party to any Person for any purpose other than in accordance with this Agreement. Company agrees that any element of the Product designed, engineered or manufactured by Bloom contains Bloom's valuable trade secrets and Company agrees to maintain the secrecy of and not to disclose any Bloom trade secrets. All Confidential Information furnished by one Party to the other Party shall remain solely the property of the disclosing Party.

Section 11.02 Disclosure. Neither Party will disclose or make Confidential Information available to any third-party other than its Affiliates, directors, officers, employees and agents (each a "**Representative**"), financing parties, and Subcontractors who perform or receive performance under this Agreement, except as specifically authorized by the other Party in writing or as required by Applicable Law. If disclosure is required by Applicable Law, such Party shall promptly notify the disclosing Party (to the extent permitted by Applicable Law) and provide an opportunity for the disclosing Party to contest such disclosure or to seek any available legal remedies to main such information in confidence. Each Party shall fully cooperate with the other Party regarding any governmental investigation (whether criminal or civil) in connection with the possession or misappropriation of any Confidential Information of the other Party by any current or former Representative or contractor of the first Party, and shall keep the other Party regularly and completely apprised of the status of any such investigation. Each Party will cause each of its Representatives, financing parties, and Subcontractors who receive Confidential Information to be subject to and comply with confidentiality obligations which are no less restrictive than those set forth in this Agreement prior to performing or receiving performance hereunder.

Section 11.03 Use. Each Party agrees to use the Confidential Information received from the other Party under this Agreement and each Purchase Order solely for such Party's internal business purposes and for the purposes of performing its obligations under this Agreement and each Purchase Order. Neither Party will duplicate any Confidential Information of the other Party unless and to the extent that such duplication is necessary to perform its obligations under this Agreement. Both Parties further agree that all Confidential Information received from the other Party, excepting one copy to be withheld solely in compliance with the receiving Party's document retention policies, will be destroyed or returned to the disclosing Party upon its request following completion or termination of this Agreement.

Section 11.04 Public Announcements. Neither Party shall make any public disclosure (including press releases, public statements, and internet and social media postings), regarding the relation of the Parties, this Agreement, any Purchase Order, the Product, any System, Commissioning or other Services provided hereunder, or the performance by the other Party of its obligations hereunder, without the prior written agreement of the other Party (which may not be unreasonably withheld, delayed or denied), except as may be required by or advisable under Applicable Law. Notwithstanding the foregoing, (a) nothing contained herein limits either Party's (or its Affiliates') rights to disclose the existence of this Agreement and the general nature of the transactions described herein on any earnings call or in similar discussions with financial media or analysts, stockholders or other members of the investment community, (b) Bloom (including its Affiliates) is permitted to disclose Company as one of its customers, and (c) Company (including its Affiliates) is permitted to disclose Bloom Energy Corporation as a vendor.

Sectijon 11.05 Term. This Article XI will apply (i) with respect to any trade secrets of a Party, until such trade secret information becomes public knowledge through no fault of the other Party; and (ii) with respect to other Confidential Information, until five (5) years after the earlier of the expiration or termination of the Term.

Article XII. INDEMNIFICATION; LIABILITY

Section 12.01 Indemnification.

(a) Except as otherwise set forth in this Agreement or any other Project Document, each Party (such Party providing indemnification, the "**Indemnifying Party**") shall indemnify, defend and hold harmless the other Party and its Representatives (collectively, the "**Indemnified Parties**"), from and against all third-party (not including Affiliates, third-party beneficiaries, or Persons with an equity or security interest in the Indemnified Party or its assets) claims (including Infringement Claims), suits, penalties, obligations, damages, losses, liabilities, payments, costs and expenses ("**Claims**") from any injury to or death of any natural person or loss or damage to property of any person to the extent caused by (a) the Indemnifying Party's negligence or willful misconduct, (b) the Indemnifying Party's failure to comply with or violation of its obligations under any Project Document, or (c) the inaccuracy of any representation by the Indemnifying Party in any Project Document or Documentation as of the date made.

(b) Bloom will indemnify Company from any Claim arising as a result of Hazardous Materials introduced to the Site by the Product and Company will indemnify Bloom for any and all other Claims related to Hazardous Materials.

(c) In each case, the Indemnified Party shall (i) make no admission of liability, (ii) promptly notify the Indemnifying Party of any such Claim, (iii) authorize the Indemnifying Party to settle or defend such Claim, provide the Indemnifying Party the exclusive authority to settle and defend the Claim, and assist such defense (at the Indemnifying Party's reasonable expense) upon request of the Indemnifying Party.

(d) Notwithstanding the foregoing, (i) an Indemnifying Party shall not be required to indemnify, defend or hold harmless an Indemnified Party for any Claim to the extent arising out of such Indemnified Party's (A) failure to perform its obligations under this Agreement, (B) a representation of such Indemnified Party failing to be true when made, or (C) the negligence, gross negligence, or willful misconduct of such Indemnified Party.

Section 12.02 Limitations on Liability.

(a) EXCEPT FOR (I) CLAIMS ARISING OUT OF EITHER PARTY'S WILLFUL MISCONDUCT OR VIOLATION OF ARTICLE VIII (*RESALE*), ARTICLE X (*INTELLECTUAL PROPERTY*), ARTICLE XI (*CONFIDENTIAL INFORMATION*), OR SECTION 6.03(d) (*ANTI-CORRUPTION*); (II) THIRD-PARTY CLAIMS SUBJECT TO INDEMNIFICATION UNDER SECTION 12.01 (*INDEMNIFICATION*); AND, (III) COMPANY'S OBLIGATION TO PAY UNDER ANY PROJECT DOCUMENT, IN NO EVENT WILL:

(i) EITHER PARTY BE LIABLE TO THE OTHER PARTY FOR LOSS OF PROFIT OR REVENUES, LOSS OF USE OF THE PRODUCTS OR ANY ASSOCIATED EQUIPMENT OR PARTS, COST OF CAPITAL, COST OF SUBSTITUTE EQUIPMENT, PARTS, FACILITIES, SERVICES OR REPLACEMENT POWER, DOWNTIME COSTS, (WITH RESPECT TO BLOOM) CLAIMS OF COMPANY'S CUSTOMERS FOR SUCH LOSSES OR DAMAGES, OR ANY COST, LOSS OR LIABILITY THAT COMPANY MAY SUFFER UNDER ANY AGREEMENT BY WHICH IT SELLS OR TRANSMITS ELECTRICITY TO ITS CUSTOMER(S) OR THIRD PARTIES, OR FOR ANY SPECIAL, CONSEQUENTIAL, INCIDENTAL, PUNITIVE OR EXEMPLARY DAMAGES, THAT THE OTHER PARTY MAY SUFFER DIRECTLY OR INDIRECTLY AS A RESULT OF THE FAILURE OR VIOLATION OF ANY WARRANTY, REPRESENTATION, COVENANT OR ANY OTHER PROVISION OF ANY PROJECT DOCUMENT; AND

(ii) EITHER PARTY'S AGGREGATE LIABILITY FOR ALL CLAIMS ARISING UNDER THE PROJECT DOCUMENTS IN CONNECTION WITH EACH PURCHASE ORDER AND THE ASSOCIATED SERVICE ORDER EXCEED THE TOTAL PRODUCT PRICE IN SUCH PURCHASE ORDER.

(b) EXCEPT FOR ITS OBLIGATIONS UNDER SECTION 5.02 (*COMMISSIONING*), BLOOM WILL NOT BE LIABLE FOR ANY ADVICE OR ASSISTANCE UNDER THIS AGREEMENT.

(c) THE LIMITATIONS AND EXCLUSIONS IN THIS SECTION 12.02 WILL APPLY TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW AND REGARDLESS OF THE FORM OF THE ACTION, WHETHER IN CONTRACT, TORT/EXTRA-CONTRACTUAL LIABILITY (INCLUDING NEGLIGENCE), STRICT LIABILITY, WARRANTY, INDEMNITY, OR OTHERWISE, EVEN IF SUCH PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Section 12.03 Injunctive Relief. Company agrees that (a) aspects of the Bloom IP are unique, confidential, and valuable assets and trade secrets of Bloom and its Affiliates, (b) (i) actions that infringe upon or are inconsistent with the rights of Bloom in and to the Bloom IP, and (ii) the violation of or threatened violation of the terms of Articles VIII (*Resale*), X (*Intellectual Property*), and XI (*Confidential Information*), in each case constitute irreparable harm to Bloom and that Bloom may seek any and all remedies available to it at law or in equity, including, at any time, at its option and where legally available, extraordinary, emergency relief, such as a preliminary injunction or specific performance, from any court of competent jurisdiction in the United States of America without first submitting the subject Dispute to negotiation pursuant to Section 14.03 (*Dispute Resolution*) so long as injunctive relief is otherwise warranted by Applicable Law. The Parties agree that emergency relief is proper for a Party's failure or threatened failure to perform under this Agreement and for misappropriation or threatened misappropriation of any Confidential Information or Bloom IP.

Article XIII. TERM; TERMINATION

Section 13.01 Term. The initial term of this Agreement is **[…***…]** years from the Effective Date (the "**Initial Term**"). The Parties may agree in writing to extend the Initial Term one time by **[…***…]** months on the same terms and conditions in this Agreement (the Initial Term plus each such extension, the "**Term**"), and such agreement must be reached and documented no later than thirty days before the expiration of the Initial Term.

Section 13.02 Termination for Cause.

(a) Either Party may terminate a Purchase Order if the other Party fails to perform under this Agreement as supplemented by such Purchase Order, which failure is not cured within thirty (30) days of receipt of written notice of such failure from the non-defaulting Party; *provided*, if such Party is working diligently to cure such failure and such failure cannot be cured within the thirty day period, such Party may have up to an additional thirty days to cure. The foregoing thirty-day cure period shall not apply to late payment by Company to Bloom, which is governed by Section 1.05 (*Invoices; Payment Terms*).

(b) Notwithstanding the foregoing, upon delivery of written notice, effective immediately:

(i) if the Company breaches the provisions of Article VIII (*Resale*), or Article X (*Intellectual Property*), then without liability Bloom may terminate this Agreement and any outstanding Purchase Order; and

(ii) if either Party breaches the provisions of Section 6.03 (*Global Standards*) it will be considered a non-curable breach of this Agreement and without liability the non-breaching Party may terminate this Agreement and any outstanding Purchase Order.

(c) To the maximum extent permitted by Applicable Law, the solvent Party may terminate this Agreement effective immediately upon delivery of written notice to the insolvent Party upon the occurrence of a Bankruptcy Event of such Party.

Section 13.03 Effect of Termination.

(a) Upon a termination in accordance with Section 13.02(a), all rights and obligations of both Parties under this Agreement solely as supplemented by the applicable Purchase Order will be terminated and discharged in full except for those obligations that expressly survive by their terms.

(b) Upon a termination in accordance with Section 13.02(b), all rights and obligations of both Parties under this Agreement will be terminated in full except for those Purchase Orders that remain outstanding as of such termination and those obligations that expressly survive by their terms.

(c) Upon a termination in accordance with Section 13.02(c), all rights and obligations of both Parties under this Agreement will be terminated in full including all outstanding Purchase Orders.

Article XIV. MISCELLANEOUS

Section 14.01 Notices. Any notices required or permitted to given hereunder must be in writing to a Party's notice address set forth on the first page of this Agreement and will be deemed delivered (1) upon hand delivery or transmission via email, where email receipt is promptly confirmed by the notice recipient; or (2) upon arrival as set forth in return receipt requested certified mail (or an equivalent method under the laws of the country where mailed) or notice from a reputable courier services (e.g., Federal Express).

Section 14.02 Governing Law; Forum. Subject to the terms of Section 12.03 (*Injunctive Relief*) requiring the application of the governing law providing maximum protection for Bloom trade secrets, this Agreement and each Purchase Order are governed by and construed in accordance with the laws of the State of New York, without giving effect to any choice of law principles thereof that may direct the application of the laws of another jurisdiction, provided that, to the extent that any portion of the work is required under Applicable Law to be governed by the laws of the state in which the Site is located, then the internal laws of such state will replace the laws of the State of New York to the extent so required. Any action arising out this Agreement or the subject matter thereof must be brought solely in the federal or state courts in the Southern District of New York.

Section 14.03 Dispute Resolution.

(a) Any dispute, controversy or claim arising out of or related to this Agreement or the subject matter thereof (a "**Dispute**") will be resolved in accordance with the dispute resolution procedures set forth in this Section 14.03.

(b) In the event of a Dispute, within ten (10) days following written request by either Party, (i) each Party shall appoint a representative of a Party with the authority to settle Disputes on behalf of such Party (a "**Dispute Representative**"), and (ii) the Dispute Representatives shall meet (which may be telephonic or in person), negotiate and attempt in good faith to resolve the Dispute quickly, informally and inexpensively. The contents of such negotiations will be deemed Confidential Information and privileged from disclosure in the event of any litigation. If the Dispute Representatives cannot resolve the Dispute within thirty (30) days after commencement of negotiations, either or both Parties may terminate such negotiations, and either Party may commence court proceedings by commencing legal action in the federal or state courts in the Southern District of New York, New York. To the maximum extent permitted under Applicable Law, each Party hereby knowingly waives its right to a jury trial.

Section 14.04 Relationship of Parties. Bloom is acting in an independent capacity, and the Parties shall not be deemed to be joint venturers, franchise, association, partners, agents, employer/employee, or anything other than Company and independent contractor. Company is not authorized to, and will not attempt to, create or assume any obligation or liability, express or implied, in the name of or otherwise on behalf of Bloom. Company will not enter into any contract, agreement or other commitment, make any warranty or guaranty, or incur any obligation or liability in the name or otherwise on behalf of Bloom.

Section 14.05 No Third-Party Beneficiaries. This Agreement does not impart any rights enforceable by any third-party, other than a permitted successor or assignee.

Section 14.06 Entire Agreement; Modification; Waiver. The Project Documents, including each Schedule or Exhibit to each Project Document, is the result of the Parties' mutual negotiation, constitutes the entire agreement between the Parties with respect to the subject matter contained in the Project Documents, and supersedes all prior and contemporaneous oral or written agreements, representations and understandings. If any portion of the Product or Services are delivered or provided pursuant to an instrument other than a Project Document or a mutually executed amendment to a Project Document, the terms of such instrument are void. No supplement, modification or amendment of any Project Document will be binding unless executed in writing by both Parties. No waiver of any of the provisions of any Project Document will be deemed a waiver of any other provision, whether or not similar, nor will any waiver constitute a continuing waiver. No waiver will be binding unless executed in writing by the Party to be charged. Failure by Company or Bloom to exercise any of its rights under any Project Document does not constitute a waiver or forfeiture of such rights. COMPANY AND BLOOM EACH ACKNOWLEDGE THAT IT HAS NOT ENTERED INTO THIS ANY PROJECT DOCUMENT IN RELIANCE ON ANY WARRANTY OR REPRESENTATIONS BY ANY PERSON EXCEPT FOR THE WARRANTIES AND REPRESENTATIONS SPECIFICALLY SET FORTH IN THE PROJECT DOCUMENTS.

Section 14.07 Joint Drafting; Construction. The Parties acknowledge that the Project Documents are jointly prepared by them, by and through their respective counsel, and that, notwithstanding any provision of Applicable Law, each Project Document and all matters related to the subject matter hereof, including the purchase of the Products, Services, or the performance of each Party under a given Project Document, will be construed without regard to any presumption or any other rule requiring construction against the Party causing such Project Document (or any part thereof) to be drafted. Unless a clear contrary intention appears, (i) the singular includes the plural and vice versa; (ii) "include" or "including" means including without limitation"; (iii) the word "or" is not exclusive; (iv) headings are provided for the convenience of the Parties and shall not affect the interpretation of a provision; (v) references to sections shall include subsections thereto; (vi) any agreement or instrument defined to or referred to (unless otherwise indicated) means that such agreement or instrument as from time to time amended, amended and restated, modified or supplemented and includes references to all attachments thereto and instruments incorporated therein; (vii) any references to a Person are also to its permitted successors and assigns; and (viii) reference to days shall mean calendar days unless the term "Business Day" is used.

Section 14.08 Severability. If any portion of this Agreement or any Purchase Order is held invalid or unenforceable, the remainder will not be affected and will remain valid and in force.

Section 14.09 Survival. The following terms of this Agreement survive termination: Section 2.05 (*Export*); Section 3.01 (*Manufacturer's Warranty*), until the expiration of the applicable Warranty Period; Section 3.02 (Infringement Warranty) and Section 3.03; Section 4.05 (*Training Services & Roles and Responsibilities*); Section 5.03 (Reliance); Section 6.03 (*Global Standards*); Article VII (*Representations*); Article VIII (*Resale Terms and Conditions*); Article X (*Intellectual Property*); Article XI (*Confidential Information*); Article XII (*Indemnification; Liability*); and Article IV (*Miscellaneous*).

Section 14.10 Counterparts and Electronic Execution. This Agreement and each Purchase Order may be executed in any number of separate counterparts and delivered by electronic means (including in

Portable Document Format (.PDF) and digital signature formats such as DocuSign), each of which when so executed will be deemed an original, and all counterparts taken together will be deemed to constitute one and the same instrument.

[END OF TERMS AND CONDITIONS – EXHIBITS BEGIN ON NEXT PAGE]

Exhibit A
Definitions

"**Affiliate**" means, with respect to any specified Person, any other Person directly or indirectly controlling, controlled by or under common control with such specified Person.

"**Anti-Corruption Laws**" is defined in Section 6.03(d).

"**Applicable Law**" means all laws, codes, ordinances, statutes, rules, regulations, orders, decrees, judgments, injunctions, notices, standards, permits or binding agreements promulgated by or entered into with any Governmental Authority.

"**Bankruptcy Event**" means, with respect to a Person, (A) such Person commences a voluntary case under any bankruptcy law; (B) such Person fails to controvert in a timely and appropriate manner, or acquiesces in writing to, any petition filed against such Party in an involuntary case under any bankruptcy law; or (C) any involuntary bankruptcy proceeding commenced against such Person remains undismissed or undischarged for a period of one hundred and twenty (120) days, (D) a court of competent jurisdiction appoints, or such Person makes an assignment of all or substantially all of its assets to, a custodian (as that term is defined in title 11 of the United States Code or the corresponding provisions of any successor laws) for such Person or all or substantially all of its assets, or (E) such Person fails to generally pay its debts as they become due, or acknowledges in writing its inability to do so, or otherwise ceases to do business (excluding mergers, acquisitions, consolidations, and reorganizations).

"**Bloom**" is defined in the first page of this Agreement.

"**Bloom IP**" means all (A) Intellectual Property embodied in (i) the Product, (ii) the Product Specifications and configuration of the Product, (iii) any Product or other part engineered or manufactured by Bloom or its Affiliates, (iv) Commissioning, (v) the Supplier Standards and this Agreement, and (vi) any and all design documents, drawings, reports, training materials, and other documentation created or delivered by Bloom in connection with this Agreement, each Purchase Order and all Services, and (B) all Intellectual Property developed or acquired by Bloom or its Affiliates, and any improvements or updates thereto or derivative works thereof.

"**Bloom Person**" means any employee, officer, consultant, agent, contractor, Subcontractor, vendor or other representative of Bloom or any of its respective Affiliates, in each case while acting as such, subject to Bloom's supervision, control or direction.

"**Business Days**" means any day in which the national banks are open in San Francisco, California and New York, New York.

"**Claims**" is defined in Section 12.01 (*Indemnification*).

"**COD**" means the date the entire System is Commissioned.

"**Commission**" "**Commissioned**" and "**Commissioning**" means the act or activities of bringing a System into full power and ready for continuous daily operation, or the state of having been brought into full power and made ready for continuous daily operation.

"**Commissioning Conditions**" is defined in Section 5.01 (*Conditions to Commissioning*).

"**Commissioning Notice Period**" is defined in the applicable Purchase Order.

"**Company**" is defined on the first page of this Agreement.

"**Company Equipment**" means any equipment that is not expressly identified as part of the System in the marked single-line drawing made in accordance with Section 4.02 (*Roles and Responsibilities*).

"**Company Person**" means any employee, officer, consultant, agent, contractor, Subcontractor, vendor or other representative of Company or any of its respective Affiliates, in each case while acting as such, subject to Company's supervision, control or direction, or, if applicable, any landlord of Company.

"**Competitor**" means a Person that (1) engages in the business of designing, engineering, fabricating, manufacturing, deploying, installing, operating, or maintaining fuel cells for use in residential, commercial, or industrial settings, including fuel cells that are hydrogen, phosphoric acid, proton exchange membrane, regenerative, zinc air, protonic ceramic, microbial, polymer electrolyte membrane, direct methanol, alkaline, phosphoric acid, molten carbonate, solid oxide and reversible, (2) is one of the following companies, or a subsidiary or Affiliate thereof, Ishikawajima Heavy Industries, Kawasaki, Pratt-Whitney, Caterpillar, Capstone, General Electric, Cummins, Generac, Siemens, Mitsubishi, Hitachi, Rolls-Royce, Wartsila or MTU, as long as they are operating in the business of designing, engineering, fabricating, manufacturing, deploying, installing, operating, or maintaining combustion engines and generators that are between 50 kW and 1.5 MW, as such list may be updated by Bloom from time to time, (3) is known by recent and unrefuted press release, credible news source, or securities filing, to be interested in, investigating or pursuing the fabrication or manufacturing of fuel cells, (4) is not a "United States person" as defined in 26 U.S.C. 7701(a)(30), and (x) is owned, in whole or in part, directly or indirectly, by a government agency, or (y) has a score that is less than 37 on the most recent U.S. Chamber of Commerce's IP Index or, regardless of its score on such index, is organized under the laws of or headquartered in China, Russia, or South Korea, or (5) is engaged in material litigation or another material dispute with Contractor in connection with alleged infringement of Intellectual Property rights; provided, a Bloom Competitor shall not include a passive investor with ownership interest in any Person that meets the foregoing definition, so long as such passive investor does not itself satisfy any of the foregoing descriptions.

"**Confidential Information**" means all information and material to which each Party has access in connection with the Product, this Agreement, and each Purchase Order and the negotiation thereof, including (A) all Bloom IP, (B) all software, documentation, financial, marketing and customer data, and other business information, (C) all data related to the internal and external design, (D) except as expressly set forth in this Agreement, all performance data of the Systems, and (E) any other material or information that is either marked as 'confidential' or 'proprietary' or disclosed under circumstances that one would reasonably expect it to be confidential. "**Confidential Information**" excludes any information that, as clearly and convincingly corroborated by written records: (a) was in receiving Party's lawful possession prior to the disclosure and had not been obtained by the receiving Party either directly or indirectly from the disclosing Party; (b) is lawfully disclosed to the receiving Party by a third party without actual, implied or intended restriction on disclosure through the chain of possession, or (c) is independently developed by the receiving Party without use of or access to the Confidential Information.

"**Covered Representative**" means a Person and its stockholders, directors, officers, employees, agents, representatives, consultants and subcontractors.

"**Custom Product**" is defined in Section 1.01(d).

"**Dispute Representative**" is defined in Section 14.03(b).

"**Dispute**" is defined in Section 14.03(a).

"**Documentation**" is defined in the Supplier Standards.

"**Effective Date**" is defined in the Preamble.

"**Engineering Representative**" means, with respect to a Party, an employee of such Party with expertise in quality, engineering, supply-chain or manufacturing.

"**Force Majeure Event**" means an event or condition occurring after the Order Date, [whether or not foreseeable], that (1) delays or interferes with the affected Party's performance of its obligations under a Purchase Order, (2) is beyond the control of the affected Party, (3) cannot be mitigated by the commercially reasonable efforts of the affected Party, and (4) is not caused by the affected Party's negligence or misconduct. “Force Majeure” includes, to the extent meeting the requirements of the foregoing sentence: (i) events of extreme weather, acts of nature, and environmental factors including fire, storms, floods, dust, lightning and earthquakes; (ii) acts of civil disturbance such as war, riot, shelter-in-place, marshal law, strikes, walkouts, lockouts, or other labor actions; (iii) fire or explosions not caused by the Product; (iv) pandemic or epidemic; (v) events of misconduct such as sabotage, vandalism, theft, accident or destruction caused by a third-party; and (vi) failure or unavailability of internet, including fiber optic cable cuts, interruption, failure of digital transmission links, or hacker attacks.

“**FRU**” means a field replacement unit that includes the stacks of a power module.

“**Governmental Approvals**” means (a) any authorizations, consents, approvals, licenses, rulings, Permits, tariffs, rates, certifications, variances, orders, judgments, decrees by, or with, a relevant Governmental Authority, and (b) any required notice to, any declaration of, or with, or any registration or filing by, or with, any relevant Governmental Authority.

“**Governmental Authority**” means any national, federal, state, provincial, regional, local or other governmental authority, independent system operator, regional transmission authority, or utility having jurisdiction over any Product, any Site, a Party, or a Party’s obligations under this Agreement and the related Purchase Order.

“**Government Official**” is defined in Section 6.03(d) (*Global Standards*).

“**Grid Event**” means a malfunction or failure of the electric grid that affects the Site.

“**Handling Fees**” means the aggregate expenses incurred in connection with fulfillment of the sale of Product or the provision of Services, such as warehouse storage cost, restocking, and packing. Handling Fees do not include the cost of Product or shipping Product.

“**Hazardous Materials**” means those elements or compounds regulated as a hazardous substance, toxic pollutant, pesticide, air pollutant, or as defined in the federal Comprehensive Environmental Response, Compensation and Liability Act, the federal Superfund Amendment and Reauthorization Act, the federal Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, the federal Water Pollution Control Act, the federal Insecticide, Fungicide and Rodenticide Act, and the federal Clean Air Act, all as amended, or any other substance or material regulated by any other Applicable Law relating to the protection of human health, water, safety or the environment.

“**Hold**” is defined in Section 1.01(f).

“**Indemnified Parties**” is defined in Section 12.01(a).

“**Indemnifying Party**” is defined in Section 12.01(a).

“**Infringement Claim**” means any third-party Claim arising out of a breach of the Infringement Warranty.

“**Infringement Warranty**” is defined in Section 3.02(a).

“**Intellectual Property**” means any of the following and all rights therein arising under the laws of the United States: (i) all patents, utility models and patent applications (and all reissues, divisions, re-examinations, renewals, extensions, provisionals, continuations and continuations-in-part thereof), patent disclosures and inventions (whether patentable or not); (ii) all trade secrets, know-how and confidential and proprietary information; (iii) all copyrights and copyrightable works (including software and computer programs) and registrations and applications therefor and any renewals, modifications and extensions thereof; (iv) all moral and economic rights of authors and inventors, however denominated; (v) unregistered and registered design rights and any registrations and applications for registration thereof; (vi) trademarks, service marks, trade names, service names, brand names, trade dress, logos, slogans, corporate names, trade styles, domain names and other source or business identifiers, whether registered or not, together with all applications therefor and all extensions and renewals thereof and all goodwill associated therewith; (vii) semiconductor chip “mask” works, and registrations and applications for registration thereof, (viii) database rights; (ix) all other forms of intellectual property, including waivable or assignable rights of publicity or moral rights; and (x) any similar, corresponding or equivalent rights to any of the foregoing.

"**Initial Term**" is defined in Section 13.01 (*Term*).

"**Licenses**" is defined in Section 10.02(b).

"**Limited License**" is defined in Section 10.02(a).

"**Manufacturer's Warranty**" is defined in Section 3.01(a).

"**Misuse**" means, with respect to the Product, use which was not intended, improper or insufficient maintenance, unauthorized modifications, or abuse.

"**Need-by-Date**" means the agreed Product delivery date set forth in the relevant Purchase Order.

"**Off-Taker**" means the end user or end purchaser of a System installed by Company.

"**O&M Agreement**" is defined in the recitals.

"**Order Date**" is the date of each Purchase Order.

"**Payment Terms**" is defined in the Purchase Order.

"**Permit**" means any permit, license, approval, certificate, consent, order, registration, franchise, entitlement, privilege or other authorization issued by a Governmental Authority.

"**Person**" means any natural person, corporation, partnership, limited liability company, joint venture, trust, sole proprietorship, unincorporated organization, other business organization, trust, union, association or Governmental Authority.

"**Product**" is defined in Section 1.01(a).

"**Project Documents**" means this Agreement and each Purchase Order issued under this Agreement and the O&M Agreement and each Service Order (as defined in the O&M Agreement) issued under the O&M Agreement.

"**Product Price**" is defined in Section 1.02(a).

"**Product Specifications**" are set forth in each Purchase Order.

"**Prohibited Activity**" is defined in Section 10.03 (*Restrictions on Use*).

"**Prudent Industry Practices**" means those practices, methods, acts, techniques and standards as may be employed at the time of performance of the applicable work, which are commonly used by a significant portion of the fuel cell electric generating industry operating in the United States and the Territory in connection with fuel cell facilities of the same or similar size and type as such Product, and such other practices, methods, acts, techniques and standards which, in the exercise of reasonable judgment by those reasonably experienced in the industry in light of the facts known at the time a decision is made, would be expected to accomplish the result intended at a reasonable cost and consistent with Applicable Law, safety and expedition. "Prudent Industry Practices" are not intended to be limited to optimum practices, methods, acts, techniques and standards to the exclusion of all others, but rather are intended to be a range of acceptable practices, methods, acts, techniques or standards.

"**Purchase Order**" is defined in the Recitals.

"Qualified Projects" has the meaning ascribed to it in the Commercial Collaboration Agreement.

"**Quarterly Forecast**" means, as of a given fiscal quarter, a non-binding, rolling forecast of Company's anticipated purchases of Product itemized by anticipated capacity of facility over the following **[…***…]** fiscal quarters subject to the forecasting projects information provided by Bloom. The Quarterly Forecast will also provide the methodology upon which such rolling forecast was made.

"**Representatives**" is defined in Section 11.02 (*Disclosure*).

"**Services**" means the work activities performed by Bloom as set forth and agreed under a Purchase Order,
and in accordance with this Agreement, which includes but is not limited to Commissioning.

"**Site**" means the real property location at which the System of which the Product is a part will be or is installed. The Site for the System is set forth in the Purchase Order.

"**Subcontractors**" means, with respect to a given Party, (i) any subcontractor, vendor, or supplier of materials or services to such Party or any other Subcontractor; or (ii) any Person engaged or employed by any of the foregoing in connection with the performance of such Party's obligations under or in connection with this Agreement.

"**Supplier Standards**" means: (i) the installation manual, product installation drawings (aka "PID" drawings), and contractor quality guaranties (aka "CQGs") provided by Bloom to Company, as may be updated from time to time (ii) compliance with all construction and utility Permits; and (iii) further criteria, standards, processes and deliverables set forth in a particular Purchase Order and provided by Bloom to Company, as may be updated from time to time.

"**System**" means any equipment that is expressly identified as part of the System in the marked single-line drawing made in accordance with Section 4.02 (*Roles and Responsibilities*).

"**Term**" is defined in Section 13.01 (*Term*).

"**Territory**" means, with respect to a given Site, the country in which such Site is located. The Territory is listed in the Purchase Order.

"**Third-Party Consent**" means a consent required from a Person that is not a Governmental Authority before a given activity can be performed.

"**Third-Party License**" is defined in Section 10.02(a).

"**Time and Materials**" means the cost of Services based on (i) the number of labor hours performed for such Service at Bloom's applicable hourly rate, (ii) expense incurred on materials and third-party services at cost plus a Handling Fee, and (iii) travel and accommodation, if required, including hours in travel and miscellaneous expenses incurred in connection therewith.

"**Total PO Price**" means the total cost of all Products, Services, Handling Fees, reimbursable costs and expenses, and taxes set forth in the in the applicable Purchase Order to be paid by Company to Bloom, as adjusted from time to time in accordance with the terms of this Agreement and the applicable Purchase Order.

Exhibit B
FORM OF PURCHASE ORDER

Purchase Order [*##*]
Order Date: *[MM/DD/YYYY]*

Table 1		
Parties	"**Company**"	"**Bloom**"
	SK E&C BETEK Corporation, a Delaware corporation CSLB # 948628, having its office at 3 Park Plaza, Suite 430, Irvine, CA 92614	Bloom Energy Corporation, a Delaware corporation
Primary Contact	[...***...]	[...***...]
Billing	c/o SK E&C BETEK Corporation 3 Park Plaza, Suite 430 Irvine, California 92614 [...***...]	4353 North 1st Street, 4th Floor San Jose, California Attn: Company Service Email: *Accounts.Receivable@bloomenergy.com* Phone: +1 (408) 543-1503

This "**Purchase Order**", dated as of the Order Date set forth above, is made pursuant to the Master Supply Agreement, dated as of [] (the "**Master Agreement**"), by and between Company and Bloom.

(1) Project

Project Information	
Site Address:	*[address 1]* *[address 2]* *[City, State, Zip*
Off-Taker	[*Business Legal Name*]
Site ID	[*Site ID*]
System Rated Capacity	[*Size*]
Configuration	[*Config*]

(2) Product[(1)]

Shipment and Delivery			
Payment Terms	[...***...] days	**Named Place ("Site")**	*[address 1]* *[address 2]* *[City, State, Zip]* United States
Currency	USD		
Incoterms	[...***...]		
Payment		[...***...]	

Product Price and Payment Schedule					
Product Description	**Need-by-Date**	**Payment Schedule**	**Units**	**Price Per Unit**	**Amount**
[*Description*]	[*mm/dd/yyyy*]	**[...***...]**	[*##*]	$USD*[##,###.##]*	$USD*[##,###.##]*
				Subtotal	$USD*[##,###.##]*
Taxes					$0 *Assuming Company provides reseller's certificate, where applicable*
				Total Product Price inclusive of taxes	**$USD*[##,###.##]***

(1) **[...***...]**.

(3) Supplier Services

Services Price and Payment Schedule		
Service Description	**Payment Schedule**	**Amount**
[Transportation of Product to Site]	**[...***...]**	Not to exceed $USD*[##,###.##]*
[Commissioning]	**[...***...]**	Not to exceed $USD*[##,###.##]*
	Total Services Price	Not to exceed $USD*[##,###.##]*
	Total PO Price	**Not to exceed $USD*[##,###.##]***

Commissioning Notice Period **[*##*] days**
Commissioning Period **[*##*] days**

The commissioning pricing is <u>inclusive</u> of:
1)

The commissioning pricing <u>excludes</u>:

[...*...]**. Bloom shall follow Exhibit H (CIG Safety Program Manual) during the Commissioning Service period.

(4) Additional Notes and Attachments:

Please see attached ESA for site specific performance specifications and grid independent operating specifications (where applicable).

Attachments to Purchase Order

Attachment	Title	Attached	Not Attached/ Not Applicable
A	Equipment List	Yes	
B	Customer ESA	Yes	
C-1	Commissioning Procedures Sample Template	Yes	
C-2	Commissioning Procedures for gas(non-CT and CT) and Water	Yes	
D	Form Commissioning Completion Certificate and Acceptance	Yes	
E	Ancillary Equipment Inspection and Power up	Yes	
F	Bloom Energy Product Installation Manuals	Yes	
G	Bloom Product Installation Drawing Sets (PID Template)	Yes	
H	CIG Safety Program Manual	Yes	

IN WITNESS WHEREOF, the undersigned have caused this Purchase Order to be executed by their duly authorized representatives and delivered as of the date first set forth above.

SK E&C BETEK Corporation	**BLOOM ENERGY CORPORATION**
By:__ Name:__ Title:__	By:__ Name:__ Title:__

Schedule 1
Insurance

Schedule 1

Exhibit 21.1

Bloom Energy Corporation

Subsidiaries*

Name of Subsidiary	**Jurisdiction**
Clean Technologies III, LLC	Delaware
2012 V PPA HoldCo, LLC	Delaware
2012 ESA Project Company, LLC	Delaware
Clean Technologies 2014, LLC	Delaware
2014 ESA HoldCo, LLC	Delaware
2014 ESA Project Company, LLC	Delaware
Clean Technologies 2015, LLC	Delaware
2015 ESA HoldCo, LLC	Delaware
2015 ESA Project Company, LLC	Delaware
BE Development, Inc.	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.

Exhibit 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-8 (Nos. 333-237538, 333-226369 and 333-253625) and on Form S-3 (No. 333-260464) of Bloom Energy Corporation of our report dated March 31, 2020 relating to the financial statements, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP

San Jose, California
February 25, 2022

EXHIBIT 23.2

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. 333-253625, 333-237538 and 333-226369 on Form S-8 of our report dated February 25, 2022, 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 of Bloom Energy Corporation for the year ended December 31, 2021.

/s/ Deloitte & Touche LLP

San Jose, CA
February 26, 2021

EXHIBIT 31.1

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 annual period ended December 31, 2021 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 25, 2022	By:	/s/ KR Sridhar
			KR Sridhar
			President and Chief Executive Officer
			(Principal Executive Officer)

EXHIBIT 31.2

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 annual period ended December 31, 2021 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 25, 2022

By: /s/ Gregory Cameron
Gregory Cameron
Executive Vice President and Chief Financial Officer
(Principal Financial Officer)

EXHIBIT 32.1

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 annual period ended December 31, 2021 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.

ate: February 25, 2022

By: /s/ KR Sridhar
KR Sridhar
President and Chief Executive Officer
(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 25, 2022

By: /s/ Gregory Cameron
Gregory Cameron
Executive Vice President and Chief Financial Officer
(Principal Financial Officer)