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: 001-34756

Tesla, Inc.
(Exact name of registrant as specified in its charter)

Delaware	**91-2197729**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
13101 Tesla Road Austin, Texas	**78725**
(Address of principal executive offices)	**(Zip Code)**

(512) 516-8177
(Registrant's telephone number, including area code)

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common stock	TSLA	The Nasdaq Global Select Market

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

Indicate by check mark whether 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 ("Exchange Act") 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 voting stock held by non-affiliates of the registrant, as of June 30, 2021, the last day of the registrant's most recently completed second fiscal quarter, was $541.28 billion (based on the closing price for shares of the registrant's Common Stock as reported by the NASDAQ Global Select Market on June 30, 2021). Shares of Common Stock held by each executive officer, director, and holder of 5% or more of the outstanding Common Stock have been excluded in that such persons may be deemed to be affiliates. This determination of affiliate status is not necessarily a conclusive determination for other purposes.

As of January 31, 2022, there were 1,033,507,611 shares of the registrant's common stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Proxy Statement for the 2022 Annual Meeting of Stockholders are incorporated herein by reference in Part III of this Annual Report on Form 10-K to the extent stated herein. Such proxy statement will be filed with the Securities and Exchange Commission within 120 days of the registrant's fiscal year ended December 31, 2021.

TESLA, INC.

ANNUAL REPORT ON FORM 10-K FOR THE YEAR ENDED DECEMBER 31, 2021

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Forward-Looking Statements

The discussions in this Annual Report on Form 10-K contain forward-looking statements reflecting our current expectations that involve risks and uncertainties. These forward-looking statements include, but are not limited to, statements concerning any potential future impact of the coronavirus disease ("COVID-19") pandemic on our business, supply chain constraints, our strategy, competition, future operations and production capacity, future financial position, future revenues, projected costs, profitability, expected cost reductions, capital adequacy, expectations regarding demand and acceptance for our technologies, growth opportunities and trends in the market in which we operate, prospects and plans and objectives of management. The words "anticipates," "believes," "could," "estimates," "expects," "intends," "may," "plans," "projects," "will," "would" and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. 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. Actual results or events could differ materially from the plans, intentions and expectations disclosed in the forward-looking statements that we make. These forward-looking statements involve risks and uncertainties that could cause our actual results to differ materially from those in the forward-looking statements, including, without limitation, the risks set forth in Part I, Item 1A, "Risk Factors" in this Annual Report on Form 10-K and in our other filings with the Securities and Exchange Commission (the "SEC"). We do not assume any obligation to update any forward-looking statements.

PART I

ITEM 1. BUSINESS

Overview

We design, develop, manufacture, sell and lease high-performance fully electric vehicles and energy generation and storage systems, and offer services related to our products. We generally sell our products directly to customers, including through our website and retail locations. We also continue to grow our customer-facing infrastructure through a global network of vehicle service centers, Mobile Service technicians, body shops, Supercharger stations and Destination Chargers to accelerate the widespread adoption of our products. We emphasize performance, attractive styling and the safety of our users and workforce in the design and manufacture of our products and are continuing to develop full self-driving technology for improved safety. We also strive to lower the cost of ownership for our customers through continuous efforts to reduce manufacturing costs and by offering financial and other services tailored to our products. Our mission to accelerate the world's transition to sustainable energy, engineering expertise, vertically integrated business model and focus on user experience differentiate us from other companies.

Segment Information

We operate as two reportable segments: (i) automotive and (ii) energy generation and storage.

The automotive segment includes the design, development, manufacturing, sales and leasing of electric vehicles as well as sales of automotive regulatory credits. Additionally, the automotive segment is also comprised of services and other, which includes non-warranty after-sales vehicle services, sales of used vehicles, retail merchandise, sales by our acquired subsidiaries to third party customers and vehicle insurance revenue. The energy generation and storage segment includes the design, manufacture, installation, sales and leasing of solar energy generation and energy storage products and related services and sales of solar energy systems incentives.

Our Products and Services

Automotive

Model 3

Model 3 is a four-door mid-size sedan that we designed for manufacturability with a base price for mass-market appeal. We currently manufacture Model 3 at the Fremont Factory and at Gigafactory Shanghai.

Model Y

Model Y is a compact sport utility vehicle ("SUV") built on the Model 3 platform with seating for up to seven adults. We currently manufacture Model Y at the Fremont Factory and at Gigafactory Shanghai.

Model S and Model X

Model S is a four-door full-size sedan and Model X is a mid-size SUV with seating for up to seven adults. Model S and Model X feature the highest performance characteristics and longest ranges that we offer in a sedan and SUV, respectively, and we manufacture both models at the Fremont Factory. In 2021, we began delivering new versions of the Model S and Model X, which offer higher performance and range.

Future Consumer and Commercial Electric Vehicles

We have also announced several planned electric vehicles to address additional vehicle markets, including specialized consumer electric vehicles in Cybertruck and the new Tesla Roadster and a commercial electric vehicle in Tesla Semi. We plan to continue leveraging developments in our proprietary Full Self-Driving ("FSD"), battery cell and other technologies.

Energy Generation and Storage

Energy Storage Products

Powerwall and Megapack are our lithium-ion battery energy storage products. Powerwall is designed to store energy at a home or small commercial facility. Megapack is an energy storage solution for commercial, industrial, utility and energy generation customers, multiple of which may be grouped together to form larger installations of gigawatt hours ("GWh") or greater capacity.

We also continue to develop software capabilities for remotely controlling and dispatching our energy storage systems across a wide range of markets and applications, including through our real-time energy control and optimization platforms.

Solar Energy Offerings

We sell retrofit solar energy systems to customers and channel partners and also make them available through power purchase agreement ("PPA") arrangements. We purchase most of the components for our retrofit solar energy systems from multiple sources to ensure competitive pricing and adequate supply. We also design and manufacture certain components for our solar energy products.

We sell our Solar Roof, which combines premium glass roof tiles with energy generation, directly to customers, as well as through channel customers. We continue to improve our installation capability and efficiency, including through collaboration with real estate developers and builders on new homes.

Technology

Automotive

Battery and Powertrain

Our core vehicle technology competencies include powertrain engineering and manufacturing and our ability to design vehicles that utilize the unique advantages of an electric powertrain. We have designed our proprietary powertrain systems to be adaptable, efficient, reliable and cost-effective while withstanding the rigors of an automotive environment. We offer dual motor powertrain vehicles, which use two electric motors to maximize traction and performance in an all-wheel drive configuration, as well as vehicle powertrain technology featuring three electric motors for further increased performance in certain versions of Model S and Model X.

Among other things, we maintain extensive testing and R&D capabilities for battery cells, packs and systems, and have built an expansive body of knowledge on lithium-ion cell chemistry types and performance characteristics. In order to enable a greater supply of cells for our products with higher energy density at lower costs, we are currently using our expertise to develop a new proprietary lithium-ion battery cell and improved manufacturing processes.

Vehicle Control and Infotainment Software

The performance and safety systems of our vehicles and their battery packs require sophisticated control software. Control systems in our vehicles optimize performance, customize vehicle behavior, manage charging and control all infotainment functions. We develop almost all of this software, including most of the user interfaces, internally and update our vehicles' software regularly through over-the-air updates.

Self-Driving Development

We have expertise in developing technologies, systems and software to enable self-driving vehicles using primarily vision-based sensors. Our FSD Computer runs our neural networks in our vehicles, and we are also developing additional computer hardware to better enable the massive amounts of field data captured by our vehicles to continually train and improve these neural networks for real-world performance.

Currently, we offer in our vehicles certain advanced driver assist systems under our Autopilot and FSD options. Although at present the driver is ultimately responsible for controlling the vehicle, our systems provide safety and convenience functionality that relieves drivers of the most tedious and potentially dangerous aspects of road travel much like the system that airplane pilots use, when conditions permit. As with other vehicle systems, we improve these functions in our vehicles over time through over-the-air updates.

We intend to establish in the future an autonomous Tesla ride-hailing network, which we expect would also allow us to access a new customer base even as modes of transportation evolve.

Energy Generation and Storage

Energy Storage Products

We leverage many of the component-level technologies from our vehicles in our energy storage products. By taking a modular approach to the design of battery

systems, we can optimize manufacturing capacity of our energy storage products. Additionally, our expertise in power electronics enables our battery systems to interconnect with electricity grids while providing fast-acting systems for power injection and absorption. We have also developed software to remotely control and dispatch our energy storage systems.

Solar Energy Systems

We have engineered Solar Roof over numerous iterations to combine aesthetic appeal and durability with power generation. The efficiency of our solar energy products is aided by our own solar inverter, which also incorporates our power electronics technologies. We designed both products to integrate with Powerwall.

Design and Engineering

Automotive

We have established significant in-house capabilities in the design and test engineering of electric vehicles and their components and systems. Our team has core competencies in computer aided design as well as durability, strength and crash test simulations, which reduces the product development time of new models. Additionally, our team has expertise in selecting and working with a range of materials for our vehicles to balance performance, cost and durability in ways that are best suited for our vehicles' target demographics and utility. We have also used our capabilities to achieve complex engineering feats in stamping, casting and thermal systems, and are currently developing designs that integrate batteries directly with vehicle body structures without separate battery packs to optimize manufacturability, weight, range and cost characteristics.

We are also expanding our manufacturing operations globally while taking action to localize our vehicle designs and production for particular markets, including country-specific market demands and factory optimizations for local workforces. As we increase our capabilities, particularly in the areas of automation, die-making and line-building, we are also making strides in the simulations modeling these capabilities prior to construction.

Energy Generation and Storage

Our expertise in electrical, mechanical, civil and software engineering allows us to design and manufacture our energy generation and storage products and components. We also employ our design and engineering expertise to customize solutions including our energy storage products, solar energy systems and/or Solar Roof for customers to meet their specific needs. We have developed software that simplifies and expedites the design process, as well as mounting hardware that facilitates solar panel installation.

Sales and Marketing

Historically, we have been able to generate significant media coverage of our company and our products, and we believe we will continue to do so. Such media coverage and word of mouth are the current primary drivers of our sales leads and have helped us achieve sales without traditional advertising and at relatively low marketing costs.

Automotive

Direct Sales

Our vehicle sales channels currently include our website and an international network of company-owned stores. In some jurisdictions, we also have galleries to educate and inform customers about our products, but such locations do not actually transact in the sale of vehicles. We believe this infrastructure enables us to better control costs of inventory, manage warranty service and pricing, educate consumers about electric vehicles, maintain and strengthen the Tesla brand and obtain rapid customer feedback.

We reevaluate our sales strategy both globally and at a location-by-location level from time to time to optimize our current sales channels. Sales of vehicles in the automobile industry tend to be cyclical in many markets, which may expose us to volatility from time to time.

Used Vehicle Sales

Our used vehicle business supports new vehicle sales by integrating the trade-in of a customer's existing Tesla or non-Tesla vehicle with the sale of a new or used Tesla vehicle. The Tesla and non-Tesla vehicles we acquire as trade-ins are subsequently remarketed, either directly by us or through third parties. We also remarket used Tesla vehicles acquired from other sources including lease returns.

Public Charging

We have a growing global network of Tesla Superchargers, which are our industrial grade, high-speed vehicle chargers. Where possible, we co-locate Superchargers with our solar and energy storage systems to reduce costs and promote renewable power. Supercharger stations are typically placed along well-traveled routes and in and around dense city centers to allow vehicle owners the ability to enjoy quick, reliable and ubiquitous charging with convenient, minimal stops. Use of the Supercharger network either requires payment of a fee or is free under certain sales programs.

We also work with a wide variety of hospitality, retail and public destinations, as well as businesses with commuting employees, to offer additional charging options for our customers. These Destination Charging and workplace locations deploy Tesla Wall Connectors to provide charging to Tesla vehicle owners who patronize or are employed at their businesses. We also work with single-family homeowners and multi-family residential entities to deploy home charging solutions.

In-App Upgrades

As our vehicles are capable of being updated remotely over-the-air, our customers may purchase additional paid options and features through the Tesla app or through the in-vehicle user interface. We expect that this functionality will also allow us to offer certain options and features on a subscription basis in the future.

Energy Generation and Storage

We market and sell our solar and energy storage products to residential, commercial and industrial customers and utilities through a variety of channels. We emphasize simplicity, standardization and accessibility to make it easy and cost-effective for customers to adopt clean energy, while reducing our customer acquisition costs.

In the U.S., we offer residential solar and energy storage products directly through our website, stores and galleries, as well as through our network of channel partners. Outside of the U.S., we use our international sales organization and a network of channel partners to market and sell these products for the residential market. We also sell Powerwall directly to utilities. In the case of products sold to utilities or channel partners, such partners typically sell the product to residential customers and manage the installation in customer homes.

We sell our commercial and utility-scale energy storage systems to customers through our U.S. and international sales organization and our channel partner network. In certain jurisdictions, we also sell installed solar energy systems (with or without energy storage) to commercial customers through PPA transactions.

Service and Warranty

Automotive

Service

We provide service for our electric vehicles at our company-owned service locations and through Tesla Mobile Service technicians who perform work remotely at customers' homes or other locations. Performing vehicle service ourselves provides us with the capability to identify problems and implement solutions and improvements faster, and optimize logistics and inventory better, than traditional automobile manufacturers and their dealer networks. The connectivity of our vehicles also allows us to diagnose and remedy many problems remotely and proactively.

Vehicle Limited Warranties and Extended Service Plans

We provide a manufacturer's limited warranty on all new and used Tesla vehicles we sell, which may include separate limited warranties on certain components, specific types of damage or battery capacity retention. We also currently offer extended service plans that provide coverage beyond the new vehicle limited warranties for certain models in specified regions.

Energy Generation and Storage

We provide service and repairs to our energy product customers, including under warranty where applicable. We generally provide manufacturer's limited warranties with our energy storage product and offer certain extended limited warranties that are available at the time of purchase of the system. If we install a system, we also provide certain limited warranties on our installation workmanship. As part of our energy storage system contracts, we may provide the customer with performance guarantees that commit that the underlying system will meet or exceed the minimum energy performance requirements specified in the contract.

For retrofit solar energy systems, we provide separate limited warranties for workmanship and against roof leaks, and for Solar Roof, we also provide limited warranties for defects and weatherization. For components not manufactured by us, we generally pass-through the applicable manufacturers' warranties. As part of our solar energy system contracts, we may provide the customer with performance guarantees that commit that the underlying system will meet or exceed the minimum energy generation requirements specified in the contract.

Financial Services

Automotive

Purchase Financing and Leases

We offer leasing and/or loan financing arrangements for our vehicles in certain jurisdictions in North America, Europe and Asia ourselves and through various financial institutions. Under certain of such programs, we have provided resale value guarantees or buyback guarantees that may obligate us to repurchase the subject vehicles at pre-determined values.

Insurance

In August 2019, we launched an insurance product designed for our customers in California. In 2021, we launched our insurance product using real-time driving behavior in select states, which offers rates that are often better than other alternatives and promotes safer driving. Our insurance products are currently available in Arizona, California, Illinois, Ohio and Texas and we plan to expand the markets in which we offer insurance products, as part of our ongoing effort to decrease the total cost of ownership for our customers.

Energy Generation and Storage

We currently offer certain loan and PPA options to residential or commercial customers who pair energy storage systems with solar energy systems. We offer certain financing options to our solar customers, which enable the customer to purchase and own a solar energy system, Solar Roof or integrated solar and Powerwall system. Our solar PPAs, offered to commercial customers, charges a fee per kilowatt-hour based on the amount of electricity produced by our solar energy systems.

Manufacturing

Manufacturing Facilities in the Bay Area, California

We manufacture and test our vehicles at our manufacturing facilities in the Bay Area in California, including the Fremont Factory and other local manufacturing facilities. We also manufacture and develop certain parts and components that are critical to our intellectual property and quality standards, such as Model S and Model X battery packs and our proprietary lithium-ion battery cells, at these locations.

Gigafactory Nevada near Reno, Nevada

Our battery material, cell, module and battery pack production for Model 3, Model Y and our energy products are manufactured in one location at Gigafactory Nevada. In addition, we manufacture vehicle drive units and energy storage components there. Gigafactory Nevada allows us to access high volumes of lithium-ion battery cells manufactured by our partner Panasonic there while achieving a significant reduction in the cost of our battery packs. We continue to invest in Gigafactory Nevada to achieve additional output there.

Gigafactory New York in Buffalo, New York

We use Gigafactory New York for the development and production of our Solar Roof and other solar products and components, energy storage components and Supercharger components and for other functions.

Gigafactory Shanghai in China

We established Gigafactory Shanghai to increase the affordability of our vehicles for customers in local markets by reducing transportation and manufacturing costs and eliminating the impact of unfavorable tariffs. We continue to increase the degree of localized procurement and manufacturing there. Gigafactory Shanghai is representative of our plan to iteratively improve our manufacturing operations as we establish new factories, as we implemented the learnings from our Model 3 and Model Y ramp at the Fremont Factory to commence and ramp our production at Gigafactory Shanghai quickly and cost-effectively.

Other Manufacturing

Generally, we continue to expand production capacity at our existing facilities. We also intend to further increase cost-competitiveness in our significant markets by strategically adding local manufacturing, including at Gigafactory Berlin in Germany and Gigafactory Texas in Austin, Texas, which will begin production in 2022.

Supply Chain

Our products use thousands of purchased parts that are sourced from hundreds of suppliers across the world. We have developed close relationships with vendors of key

parts such as battery cells, electronics and complex vehicle assemblies. Certain components purchased from these suppliers are shared or are similar across many product lines, allowing us to take advantage of pricing efficiencies from economies of scale.

As is the case for most automotive companies, most of our procured components and systems are sourced from single suppliers. Where multiple sources are available for certain key components, we work to qualify multiple suppliers for them where it is sensible to do so in order to minimize production risks owing to disruptions in their supply. We also mitigate risk by maintaining safety stock for key parts and assemblies and die banks for components with lengthy procurement lead times.

Our products use various raw materials including aluminum, steel, cobalt, lithium, nickel and copper. Pricing for these materials is governed by market conditions and may fluctuate due to various factors outside of our control, such as supply and demand and market speculation. We strive to execute long-term supply contracts for such materials at competitive pricing when feasible, and we currently believe that we have adequate access to raw materials supplies in order to meet the needs of our operations.

Governmental Programs, Incentives and Regulations

Globally, both the operation of our business by us and the ownership of our products by our customers are impacted by various government programs, incentives and other arrangements. Our business and products are also subject to numerous governmental regulations that vary among jurisdictions.

Programs and Incentives

California Alternative Energy and Advanced Transportation Financing Authority Tax Incentives

We have agreements with the California Alternative Energy and Advanced Transportation Financing Authority that provide multi-year sales tax exclusions on purchases of manufacturing equipment that will be used for specific purposes, including the expansion and ongoing development of electric vehicles and powertrain production in California, thus reducing our cost basis in the related assets in our consolidated financial statements included elsewhere in this Annual Report on Form 10-K.

Gigafactory Nevada—Nevada Tax Incentives

In connection with the construction of Gigafactory Nevada, we entered into agreements with the State of Nevada and Storey County in Nevada that provide abatements for specified taxes, discounts to the base tariff energy rates and transferable tax credits in consideration of capital investment and hiring targets that were met at Gigafactory Nevada. These incentives are available until June 2024 or June 2034, depending on the incentive and primarily offset related costs in our consolidated financial statements included elsewhere in this Annual Report on Form 10-K.

Gigafactory New York—New York State Investment and Lease

We have a lease through the Research Foundation for the State University of New York (the "SUNY Foundation") with respect to Gigafactory New York. Under the lease and a related research and development agreement, we are continuing to designate further buildouts at the facility. We are required to comply with certain covenants, including hiring and cumulative investment targets. This incentive offsets the related lease costs of the facility in our consolidated financial statements included elsewhere in this Annual Report on Form 10-K.

As we temporarily suspended most of our manufacturing operations at Gigafactory New York pursuant to a New York State executive order issued in March 2020 as a result of the COVID-19 pandemic, we were granted a deferral of our obligation to be compliant with our applicable targets through December 31, 2021 in an amendment memorialized in August 2021. As of December 31, 2021, we are in excess of such targets relating to investments and personnel in the State of New York and Buffalo.

Gigafactory Shanghai—Land Use Rights and Economic Benefits

We have an agreement with the local government of Shanghai for land use rights at Gigafactory Shanghai. Under the terms of the arrangement, we are required to meet a cumulative capital expenditure target and an annual tax revenue target starting at the end of 2023. In addition, the Shanghai government has granted to our Gigafactory Shanghai subsidiary certain incentives to be used in connection with eligible capital investments at Gigafactory Shanghai. These incentives offset the related costs of our facilities in our consolidated financial statements included elsewhere in this Annual Report on Form 10-K. Finally, the Shanghai government granted a beneficial corporate income tax rate of 15% to certain eligible enterprises, which is lower than the 25% statutory corporate income tax rate in China. Our Gigafactory Shanghai subsidiary was granted this lower rate for 2019 through 2023. This lower tax rate reduces the income tax provision in our consolidated financial statements included elsewhere in this Annual Report on Form 10-K.

Gigafactory Texas – Tax Incentives

In connection with the construction of Gigafactory Texas, we entered into a 20-year agreement with Travis County in Texas pursuant to which we would receive grant

funding equal to 70-80% of property taxes paid by us to Travis County and a separate 10-year agreement with the Del Valle Independent School District in Texas pursuant to which a portion of the taxable value of our property would be capped at a specified amount, in each case subject to our meeting certain minimum economic development metrics through our construction and operations at Gigafactory Texas. These incentives will offset the related costs in our consolidated financial statements included elsewhere in this Annual Report on Form 10-K.

Automotive Regulatory Credits

We earn tradable credits in the operation of our business under various regulations related to zero-emission vehicles ("ZEVs"), greenhouse gas, fuel economy and clean fuel. We sell these credits to other regulated entities who can use the credits to comply with emission standards and other regulatory requirements. Sales of these credits are recognized within automotive regulatory credits revenue in our consolidated financial statements included elsewhere in this Annual Report on Form 10-K.

Energy Storage System Incentives and Policies

While the regulatory regime for energy storage projects is still under development, there are various policies, incentives and financial mechanisms at the federal, state and local levels that support the adoption of energy storage.

For example, energy storage systems that are charged using solar energy may be eligible for the solar energy-related U.S. federal tax credits described below. The Federal Energy Regulatory Commission ("FERC") has also taken steps to enable the participation of energy storage in wholesale energy markets. In addition, California and a number of other states have adopted procurement targets for energy storage, and behind-the-meter energy storage systems qualify for funding under the California Self Generation Incentive Program. Our customers primarily benefit directly under these programs. In certain instances our customers may transfer such credits to us as contract consideration. In such transactions they are included as a component of energy generation and storage revenues in our consolidated financial statements included elsewhere in this Annual Report on Form 10-K.

Solar Energy System Incentives and Policies

U.S. federal, state and local governments have established various policies, incentives and financial mechanisms to reduce the cost of solar energy and to accelerate the adoption of solar energy. These incentives include tax credits, cash grants, tax abatements and rebates.

In particular, Sections 48 and 25D of the U.S. Internal Revenue Code currently provide a tax credit of 26% of qualified commercial or residential expenditures for solar energy systems, which may be claimed by our customers for systems they purchase, or by us for arrangements where we own the systems. These tax credits are primarily for the direct benefit of our customers and are currently scheduled to decline and/or expire in 2023 and beyond.

Regulations

Vehicle Safety and Testing

In the U.S., our vehicles are subject to regulation by the National Highway Traffic Safety Administration ("NHTSA"), including all applicable Federal Motor Vehicle Safety Standards ("FMVSS") and the NHTSA bumper standard. Numerous FMVSS apply to our vehicles, such as crash-worthiness and occupant protection requirements. While our current vehicles fully comply and we expect that our vehicles in the future will fully comply with all applicable FMVSS with limited or no exemptions, FMVSS are subject to change from time to time. As a manufacturer, we must self-certify that our vehicles meet all applicable FMVSS and the NHTSA bumper standard, or otherwise are exempt, before the vehicles may be imported or sold in the U.S.

We are also required to comply with other federal laws administered by NHTSA, including the CAFE standards, Theft Prevention Act requirements, labeling requirements and other information provided to customers in writing, Early Warning Reporting requirements regarding warranty claims, field reports, death and injury reports and foreign recalls and additional requirements for cooperating with compliance and safety investigations and recall reporting. The U.S. Automobile Information and Disclosure Act also requires manufacturers of motor vehicles to disclose certain information regarding the manufacturer's suggested retail price, optional equipment and pricing. In addition, federal law requires inclusion of fuel economy ratings, as determined by the U.S. Department of Transportation and the Environmental Protection Agency (the "EPA"), and New Car Assessment Program ratings as determined by NHTSA, if available.

Our vehicles sold outside of the U.S. are subject to similar foreign compliance, safety, environmental and other regulations. Many of those regulations are different from those applicable in the U.S. and may require redesign and/or retesting. Some of those regulations impact or prevent the rollout of new vehicle features. Additionally, the European Union established new rules regarding additional compliance oversight that commenced in 2020.

Self-Driving Vehicles

Generally, laws pertaining to self-driving vehicles are evolving globally, and in some cases may create restrictions on features that we develop. While there are currently no federal U.S. regulations specifically pertaining to self-driving vehicles or self-driving equipment, NHTSA has published recommended guidelines on self-driving vehicles, and retains the authority to investigate and/or take action on the safety of any vehicle, equipment or features operating on public roads. Certain U.S. states also have legal restrictions on the operation, registration or licensure of self-driving vehicles, and many other states are considering them. This regulatory patchwork increases the legal complexity with respect to self-driving vehicles in the U.S.

In markets that follow the regulations of the United Nations Economic Commission for Europe, some requirements restrict the design of advanced driver-assistance or self-driving features, which can compromise or prevent their use entirely. Other applicable laws, both current and proposed, may hinder the path and timeline to introducing self-driving vehicles for sale and use in the markets where they apply.

Other key markets, including China, continue to consider self-driving regulation. Any implemented regulations may differ materially from those in the U.S. and Europe, which may further increase the legal complexity of self-driving vehicles and limit or prevent certain features.

Automobile Manufacturer and Dealer Regulation

In the U.S., state laws regulate the manufacture, distribution, sale and service of automobiles, and generally require motor vehicle manufacturers and dealers to be licensed in order to sell vehicles directly to residents. Certain states have asserted that the laws in such states do not permit automobile manufacturers to be licensed as dealers or to act in the capacity of a dealer, or that they otherwise restrict a manufacturer's ability to deliver or service vehicles. To sell vehicles to residents of states where we are not licensed as a dealer, we generally conduct the sale out of the state. In certain such states, we have opened "galleries" that serve an educational purpose and where the title transfer may not occur.

Some automobile dealer trade associations have both challenged the legality of our operations in court and used administrative and legislative processes to attempt to prohibit or limit our ability to operate existing stores or expand to new locations. Certain dealer associations have also actively lobbied state licensing agencies and legislators to interpret existing laws or enact new laws in ways not favorable to our ownership and operation of our own retail and service locations. We expect such challenges to continue, and we intend to actively fight any such efforts.

Battery Safety and Testing

Our battery packs are subject to various U.S. and international regulations that govern transport of "dangerous goods," defined to include lithium-ion batteries, which may present a risk in transportation. We conduct testing to demonstrate our compliance with such regulations.

We use lithium-ion cells in our high voltage battery packs in our vehicles and energy storage products. The use, storage and disposal of our battery packs are regulated under existing laws and are the subject of ongoing regulatory changes that may add additional requirements in the future. We have agreements with third party battery recycling companies to recycle our battery packs and we are also piloting our own recycling technology.

Solar Energy—General

We are subject to certain state and federal regulations applicable to solar and battery storage providers and sellers of electricity. To operate our systems, we enter into standard interconnection agreements with applicable utilities. Sales of electricity and non-sale equipment leases by third parties, such as our leases and PPAs, have faced regulatory challenges in some states and jurisdictions.

Solar Energy—Net Metering

Most states in the U.S. make net energy metering, or net metering, available to solar customers. Net metering typically allows solar customers to interconnect their solar energy systems to the utility grid and offset their utility electricity purchases by receiving a bill credit for excess energy generated by their solar energy system that is exported to the grid. In certain jurisdictions, regulators or utilities have reduced or eliminated the benefit available under net metering or have proposed to do so.

Competition

Automotive

The worldwide automotive market is highly competitive and we expect it will become even more competitive in the future as we introduce additional vehicles in a broader cross-section of the passenger and commercial vehicle market and expand our vehicles' capabilities.

We believe that our vehicles compete in the market both based on their traditional segment classification as well as based on their propulsion technology. For example, Model S and Model X compete primarily with premium sedans and premium SUVs and Model 3 and Model Y compete with small to medium-sized sedans and compact SUVs, which are extremely competitive markets. Competing products typically include internal combustion vehicles from more established automobile manufacturers; however, many established and new automobile manufacturers have entered or have announced plans to enter the market for electric and other alternative fuel vehicles. Overall, we believe these announcements and vehicle introductions, including the introduction of electric vehicles into rental car company fleets, promote the development of the electric vehicle market by highlighting the attractiveness of electric vehicles relative to the internal combustion vehicle. Many major automobile manufacturers have electric vehicles available today in major markets including the U.S., China and Europe, and other current and prospective automobile manufacturers are also developing electric vehicles. In addition, several manufacturers offer hybrid vehicles, including plug-in versions.

We also believe that there is increasing competition for our vehicle offerings as a platform for delivering self-driving technologies, charging solutions and other features and services, and we expect to compete in this developing market through continued progress on our Autopilot, FSD and neural network capabilities, Supercharger network and our infotainment offerings.

Energy Generation and Storage

Energy Storage Systems

The market for energy storage products is also highly competitive, and both established and emerging companies have introduced products that are similar to our product portfolio or that are alternatives to the elements of our systems. We compete with these companies based on price, energy density and efficiency. We believe that the specifications and features of our products, our strong brand and the modular, scalable nature of our energy storage products give us a competitive advantage in our markets.

Solar Energy Systems

The primary competitors to our solar energy business are the traditional local utility companies that supply energy to our potential customers. We compete with these traditional utility companies primarily based on price and the ease by which customers can switch to electricity generated by our solar energy systems. We also compete with solar energy companies that provide products and services similar to ours. Many solar energy companies only install solar energy systems, while others only provide financing for these installations. We believe we have a significant expansion opportunity with our offerings and that the regulatory environment is increasingly conducive to the adoption of renewable energy systems.

Intellectual Property

We place a strong emphasis on our innovative approach and proprietary designs which bring intrinsic value and uniqueness to our product portfolio. As part of our business, we seek to protect the underlying intellectual property rights of these innovations and designs such as with respect to patents, trademarks, copyrights, trade secrets and other measures, including through employee and third-party nondisclosure agreements and other contractual arrangements. For example, we place a high priority on obtaining patents to provide the broadest and strongest possible protection to enable our freedom to operate our innovations and designs within our products and technologies in the electric vehicle market as well as to protect and defend our product portfolio. We have also adopted a patent policy in which we irrevocably pledged that we will not initiate a lawsuit against any party for infringing our patents through activity relating to electric vehicles or related equipment for so long as such party is acting in good faith. We made this pledge in order to encourage the advancement of a common, rapidly-evolving platform for electric vehicles, thereby benefiting ourselves, other companies making electric vehicles and the world.

Environmental, Social and Governance (ESG) and Human Capital Resources

ESG

The very purpose of Tesla's existence is to accelerate the world's transition to sustainable energy. We believe the world cannot reduce carbon emissions without addressing both energy generation and consumption, and we are designing and manufacturing a complete energy and transportation ecosystem to achieve this goal. As we expand, we are building each new factory to be more efficient and sustainably designed than the previous one, including with respect to waste reduction and water usage, and we are focused on reducing the carbon footprint of our supply chain.

We are committed to only sourcing responsibly produced materials, and our suppliers are required to provide evidence of management systems that ensure social, environmental and sustainability best practices in their own operations, as well as to demonstrate a commitment to responsible sourcing into their supply chains. We have a zero-tolerance policy when it comes to child or forced labor and human trafficking by our suppliers and we look to the Organization for Economic Co-operation and Development Due Diligence Guidelines to inform our process and use feedback from our internal and external stakeholders to find ways to continually improve. We are also driving safety in our own factories by focusing on worker engagement. As our production volumes increase, our incidents per vehicle continue to drop.

We believe that sound corporate governance is critical to helping us achieve our goals, including with respect to ESG. We continue to evolve a governance framework that exercises appropriate oversight of responsibilities at all levels throughout the company and manages its affairs consistent with high principles of business ethics. Our ESG Sustainability Council is made up of leaders from across our company, and regularly presents to our Board of Directors, which oversees our ESG impacts, initiatives and priorities.

Human Capital Resources

As of December 31, 2021, our full-time count for our and our subsidiaries' employees worldwide was 99,290. To date, we have not experienced any work stoppages as a result of labor disputes, and we consider our relationship with our employees to be good. Our key human capital objectives in managing our business include attracting, developing and retaining top talent while integrating diversity, equity and inclusion principles and practices into our core values.

We want to attract a pool of diverse and exceptional candidates and support their career growth once they become employees. Our efforts begin at the entry level with development, apprenticeship and internship programs in local high schools, community colleges and four-year colleges. In addition, we seek to hire based on talent rather than solely on educational pedigree, and have provided thousands of job openings, including in our local communities, for capable workers from various backgrounds to learn valuable skills in critical operations such as in manufacturing, vehicle service and energy product installation. We also emphasize in our evaluation and career development efforts internal mobility opportunities for employees to drive professional development. Our goal is a long-term, upward-bound career at Tesla for every employee, which we believe also drives our retention efforts.

Our ability to retain our talented workforce is correlated to our compensation practices and culture of open communication. We provide a highly competitive wage that meets or exceeds that of comparable manufacturing roles, even before equity and benefits are factored in. In addition, the majority of our employees have the opportunity to receive additional Tesla equity each year based on their performance. We continue to review salary and wages against benchmarks and adjust to ensure wages are competitive, and have instituted a robust process for ensuring pay equity across our organization. In addition, we provide a comprehensive range of benefits options, including no-cost paycheck contributions for medical, dental and vision plan options for employees and family members.

Our employees have the right to freely discuss their wages, benefits and terms and conditions of employment and to raise complaints internally and externally. We encourage our employees to bring any concerns or complaints they have to any member of management, and any employee who is subjected to, a witness or has knowledge of any conduct that violates Tesla policies is asked to immediately report the conduct. Our employees can report concerns to their supervisor or human resources partner, as well as an integrity line to report concerns anonymously and without fear of retaliation that is available 24 hours a day, seven days a week. Concerns are reviewed in accordance with established protocols by investigators with expertise, who also periodically review for trends and outcomes for remediation and appropriate controls. Tesla provides employee training on workplace conduct at least annually and in 2021 implemented a campaign to re-highlight different reporting mechanisms available to employees.

We also believe that our ability to retain our workforce is dependent on our ability to foster an environment that is sustainably safe, respectful, fair and inclusive of everyone and promotes diversity, equity and inclusion inside and outside of our business. From our outreach to Historically Black Colleges and Universities and Hispanic Serving Institutions to sponsoring employee resource groups across numerous locations, including Asian Pacific Islanders at Tesla, Black at Tesla, Intersectionality, Latinos at Tesla, LGBTQ at Tesla, Veterans at Tesla and Women in Tesla, we engage these networks as key business resources and sources of actionable feedback. We are also working on diversity efforts in our supply chain to expand our outreach and support to small- and large-scale suppliers from underrepresented communities to emphasize this culture with our own employees.

Available Information

We file or furnish periodic reports and amendments thereto, including our Annual Reports on Form 10-K, our Quarterly Reports on Form 10-Q and Current Reports on Form 8-K, proxy statements and other information with the SEC. In addition, the SEC maintains a website (www.sec.gov) that contains reports, proxy and information statements, and other information regarding issuers that file electronically. Our website is located at www.tesla.com, and our reports, amendments thereto, proxy statements and other information are also made available, free of charge, on our investor relations website at ir.tesla.com as soon as reasonably practicable after we electronically file or furnish such information with the SEC. The information posted on our website is not incorporated by reference into this Annual Report on Form 10-K.

ITEM 1A. RISK FACTORS

You should carefully consider the risks described below together with the other information set forth in this report, which could materially affect our business, financial condition and future results. The risks described below are not the only risks facing our company. Risks and uncertainties not currently known to us or that we currently deem to be immaterial also may materially adversely affect our business, financial condition and operating results.

Risks Related to Our Ability to Grow Our Business

We may be impacted by macroeconomic conditions resulting from the global COVID-19 pandemic.

Since the first quarter of 2020, there has been a worldwide impact from the COVID-19 pandemic. Government regulations and shifting social behaviors have limited or closed non-essential transportation, government functions, business activities and person-to-person interactions. In some cases, the relaxation of such trends has been followed by actual or contemplated returns to stringent restrictions on gatherings or commerce, including in parts of the U.S., and the rest of the world.

During 2020, we temporarily suspended operations at each of our manufacturing facilities worldwide, and certain of our suppliers also shut down operations temporarily or permanently, including during the recently re-imposed lockdowns in certain parts of the world. We instituted temporary employee furloughs and compensation reductions while our U.S. operations were scaled back. Temporary impediments to administrative activities supporting our operations also hampered our product deliveries and deployments.

Global trade conditions and consumer trends that originated during the pandemic continue to persist and may also have long-lasting adverse impact on us and our industries independently of the progress of the pandemic. For example, pandemic-related issues have exacerbated port congestion and intermittent supplier shutdowns and delays, resulting in additional expenses to expedite delivery of critical parts. Similarly, increased demand for personal electronics has created a shortfall of semiconductors, which has caused challenges in our supply chain and production. In addition, labor shortages resulting from the pandemic, including worker absenteeism, may lead to increased difficulty in hiring and retaining manufacturing and service workers, as well as increased labor costs. Sustaining our production trajectory will require the ongoing readiness and solvency of our suppliers and vendors, a stable and motivated production workforce and government cooperation, including for travel and visa allowances. The contingencies inherent in the construction of, and ramp at, new facilities such as Gigafactory Berlin and Gigafactory Texas may be exacerbated by these challenges.

We cannot predict the duration or direction of current global trends or their sustained impact. Ultimately, we continue to monitor macroeconomic conditions to remain flexible and to optimize and evolve our business as appropriate, and we will have to accurately project demand and infrastructure requirements globally and deploy our production, workforce and other resources accordingly. If we experience unfavorable global market conditions, or if we cannot or do not maintain operations at a scope that is commensurate with such conditions or are later required to or choose to suspend such operations again, our business, prospects, financial condition and operating results may be harmed.

We may experience delays in launching and ramping the production of our products and features, or we may be unable to control our manufacturing costs.

We have previously experienced and may in the future experience launch and production ramp delays for new products and features. For example, we encountered unanticipated supplier issues that led to delays during the initial ramp of our first Model X and experienced challenges with a supplier and with ramping full automation for certain of our initial Model 3 manufacturing processes. In addition, we may introduce in the future new or unique manufacturing processes and design features for our products. There is no guarantee that we will be able to successfully and timely introduce and scale such processes or features.

In particular, our future business depends in large part on increasing the production of mass-market vehicles including Model 3 and Model Y, which we are planning to achieve through multiple factories worldwide. We have relatively limited experience to date in manufacturing Model 3 and Model Y at high volumes and even less experience building and ramping vehicle production lines across multiple factories in different geographies. In order to be successful, we will need to implement, maintain and ramp efficient and cost-effective manufacturing capabilities, processes and supply chains and achieve the design tolerances, high quality and output rates we have planned at our manufacturing facilities in California, Nevada, Texas, China and Germany. We will also need to hire, train and compensate skilled employees to operate these facilities. Bottlenecks and other unexpected challenges such as those we experienced in the past may arise during our production ramps, and we must address them promptly while continuing to improve manufacturing processes and reducing costs. If we are not successful in achieving these goals, we could face delays in establishing and/or sustaining our Model 3 and Model Y ramps or be unable to meet our related cost and profitability targets.

We may also experience similar future delays in launching and/or ramping production of our energy storage products and Solar Roof; new product versions or variants such as the recently updated Model S and Model X; new vehicles such as Tesla Semi, Cybertruck and the new Tesla Roadster; and future features and services based on artificial intelligence, such as new Autopilot or FSD

functionalities, the autonomous Tesla ride-hailing network and robotics. Likewise, we may encounter delays with the design, construction and regulatory or other approvals necessary to build and bring online future manufacturing facilities and products.

Any delay or other complication in ramping the production of our current products or the development, manufacture, launch and production ramp of our future products, features and services, or in doing so cost-effectively and with high quality, may harm our brand, business, prospects, financial condition and operating results.

We may be unable to grow our global product sales, delivery and installation capabilities and our servicing and vehicle charging networks, or we may be unable to accurately project and effectively manage our growth.

Our success will depend on our ability to continue to expand our sales capabilities. We are targeting with Model 3 and Model Y a global mass demographic with a broad range of potential customers, in which we have relatively limited experience projecting demand and pricing our products. We currently produce numerous international variants at a limited number of factories, and if our specific demand expectations for these variants prove inaccurate, we may not be able to timely generate deliveries matched to the vehicles that we produce in the same timeframe or that are commensurate with the size of our operations in a given region. Likewise, as we develop and grow our energy products and services worldwide, our success will depend on our ability to correctly forecast demand in various markets.

Because we do not have independent dealer networks, we are responsible for delivering all of our vehicles to our customers. We may face difficulties with deliveries at increasing volumes, particularly in international markets requiring significant transit times. For example, we saw challenges in ramping our logistics channels in China and Europe to initially deliver Model 3 there in the first quarter of 2019. We have deployed a number of delivery models, such as deliveries to customers' homes and workplaces and touchless deliveries, but there is no guarantee that such models will be scalable or be accepted globally. Likewise, as we ramp our energy products, we are working to substantially increase our production and installation capabilities. If we experience production delays or inaccurately forecast demand, our business, financial condition and operating results may be harmed.

Moreover, because of our unique expertise with our vehicles, we recommend that our vehicles be serviced by us or by certain authorized professionals. If we experience delays in adding servicing capacity or servicing our vehicles efficiently, or experience unforeseen issues with the reliability of our vehicles, particularly higher-volume and relatively newer additions to our fleet such as Model 3 and Model Y, it could overburden our servicing capabilities and parts inventory. Similarly, the increasing number of Tesla vehicles also requires us to continue to rapidly increase the number of our Supercharger stations and connectors throughout the world.

There is no assurance that we will be able to ramp our business to meet our sales, delivery, installation, servicing and vehicle charging targets globally, that our projections on which such targets are based will prove accurate or that the pace of growth or coverage of our customer infrastructure network will meet customer expectations. These plans require significant cash investments and management resources and there is no guarantee that they will generate additional sales or installations of our products, or that we will be able to avoid cost overruns or be able to hire additional personnel to support them. As we expand, we will also need to ensure our compliance with regulatory requirements in various jurisdictions applicable to the sale, installation and servicing of our products, the sale or dispatch of electricity related to our energy products and the operation of Superchargers. If we fail to manage our growth effectively, it may harm our brand, business, prospects, financial condition and operating results.

Our future growth and success are dependent upon consumers' demand for electric vehicles and specifically our vehicles in an automotive industry that is generally competitive, cyclical and volatile.

If the market for electric vehicles in general and Tesla vehicles in particular does not develop as we expect, develops more slowly than we expect, or if demand for our vehicles decreases in our markets or our vehicles compete with each other, our business, prospects, financial condition and operating results may be harmed.

We are still at an earlier stage of development and have limited resources and production relative to established competitors that offer internal combustion engine vehicles. In addition, electric vehicles still comprise a small percentage of overall vehicle sales. As a result, the market for our vehicles could be negatively affected by numerous factors, such as:

- perceptions about electric vehicle features, quality, safety, performance and cost;
- perceptions about the limited range over which electric vehicles may be driven on a single battery charge, and access to charging facilities;
- competition, including from other types of alternative fuel vehicles, plug-in hybrid electric vehicles and high fuel-economy internal combustion engine vehicles;

- volatility in the cost of oil and gasoline, such as wide fluctuations in crude oil prices during 2020;
- government regulations and economic incentives; and
- concerns about our future viability.

Finally, the target demographics for our vehicles, particularly Model 3 and Model Y, are highly competitive. Sales of vehicles in the automotive industry tend to be cyclical in many markets, which may expose us to further volatility.

Our suppliers may fail to deliver components according to schedules, prices, quality and volumes that are acceptable to us, or we may be unable to manage these components effectively.

Our products contain thousands of parts purchased globally from hundreds of suppliers, including single-source direct suppliers, which exposes us to multiple potential sources of component shortages. Unexpected changes in business conditions, materials pricing, labor issues, wars, trade policies, natural disasters such as the March 2011 earthquakes in Japan, health epidemics such as the global COVID-19 pandemic, trade and shipping disruptions, port congestions and other factors beyond our or our suppliers' control could also affect these suppliers' ability to deliver components to us or to remain solvent and operational. For example, a global shortage of semiconductors has been reported since early 2021 and has caused challenges in the manufacturing industry and impacted our supply chain and production as well. We have used alternative parts and programmed software to mitigate the challenges caused by these shortages, but there is no guarantee we may be able to continually do so as we scale production to meet our growth targets. Additionally, if our suppliers do not accurately forecast and effectively allocate production or if they are not willing to allocate sufficient production to us, it may reduce our access to components and require us to search for new suppliers. The unavailability of any component or supplier could result in production delays, idle manufacturing facilities, product design changes and loss of access to important technology and tools for producing and supporting our products, as well as impact our capacity expansion and our ability to fulfill our obligations under customer contracts. Moreover, significant increases in our production, such as for Model 3 and Model Y, or product design changes by us have required and may in the future require us to procure additional components in a short amount of time. Our suppliers may not be willing or able to sustainably meet our timelines or our cost, quality and volume needs, or to do so may cost us more, which may require us to replace them with other sources. Finally, we have limited vehicle manufacturing experience outside of the Fremont Factory and we may experience issues increasing the level of localized procurement at our Gigafactory Shanghai and at future factories such as Gigafactory Berlin and Gigafactory Texas. While we believe that we will be able to secure additional or alternate sources or develop our own replacements for most of our components, there is no assurance that we will be able to do so quickly or at all. Additionally, we may be unsuccessful in our continuous efforts to negotiate with existing suppliers to obtain cost reductions and avoid unfavorable changes to terms, source less expensive suppliers for certain parts and redesign certain parts to make them less expensive to produce, especially in light of the increases in materials pricing. Any of these occurrences may harm our business, prospects, financial condition and operating results.

As the scale of our vehicle production increases, we will also need to accurately forecast, purchase, warehouse and transport components at high volumes to our manufacturing facilities and servicing locations internationally. If we are unable to accurately match the timing and quantities of component purchases to our actual needs or successfully implement automation, inventory management and other systems to accommodate the increased complexity in our supply chain and parts management, we may incur unexpected production disruption, storage, transportation and write-off costs, which may harm our business and operating results.

We may be unable to meet our projected construction timelines, costs and production ramps at new factories, or we may experience difficulties in generating and maintaining demand for products manufactured there.

Our ability to increase production of our vehicles on a sustained basis, make them affordable globally by accessing local supply chains and workforces and streamline delivery logistics is dependent on the construction and ramp of our current and future factories. The construction of and commencement and ramp of production at these factories are subject to a number of uncertainties inherent in all new manufacturing operations, including ongoing compliance with regulatory requirements, procurement and maintenance of construction, environmental and operational licenses and approvals for additional expansion, potential supply chain constraints, hiring, training and retention of qualified employees and the pace of bringing production equipment and processes online with the capability to manufacture high-quality units at scale. For example, we are currently constructing Gigafactory Berlin under conditional permits in anticipation of being granted final permits. Moreover, we will have to establish and ramp production of our proprietary battery cells and packs at our new factories, and we additionally intend to incorporate sequential design and manufacturing changes into vehicles manufactured at each new factory. We have limited experience to date with developing and implementing manufacturing innovations outside of the Fremont Factory and Gigafactory Shanghai. In particular, the majority of our design and engineering resources are currently located in California. In order to meet our expectations for our new factories, we must expand and manage localized design and engineering talent and resources. If we experience any issues or delays in meeting our projected timelines, costs, capital efficiency and production capacity for our new factories, expanding and managing teams to implement iterative design and production changes there, maintaining and complying with the terms of any debt financing that we obtain to fund them or generating and maintaining demand for the vehicles we manufacture there, our business, prospects, operating results and financial condition may be harmed.

We will need to maintain and significantly grow our access to battery cells, including through the development and manufacture of our own cells, and control our related costs.

We are dependent on the continued supply of lithium-ion battery cells for our vehicles and energy storage products, and we will require substantially more cells to grow our business according to our plans. Currently, we rely on suppliers such as Panasonic and Contemporary Amperex Technology Co. Limited (CATL) for these cells. We have to date fully qualified only a very limited number

of such suppliers and have limited flexibility in changing suppliers. Any disruption in the supply of battery cells from our suppliers could limit production of our vehicles and energy storage products. In the long term, we intend to supplement cells from our suppliers with cells manufactured by us, which we believe will be more efficient, manufacturable at greater volumes and more cost-effective than currently available cells. However, our efforts to develop and manufacture such battery cells have required, and may continue to require, significant investments, and there can be no assurance that we will be able to achieve these targets in the timeframes that we have planned or at all. If we are unable to do so, we may have to curtail our planned vehicle and energy storage product production or procure additional cells from suppliers at potentially greater costs, either of which may harm our business and operating results.

In addition, the cost of battery cells, whether manufactured by our suppliers or by us, depends in part upon the prices and availability of raw materials such as lithium, nickel, cobalt and/or other metals. The prices for these materials fluctuate and their available supply may be unstable, depending on market conditions and global demand for these materials, including as a result of increased global production of electric vehicles and energy storage products. Any reduced availability of these materials may impact our access to cells and any increases in their prices may reduce our profitability if we cannot recoup the increased costs through increased vehicle prices. Moreover, any such attempts to increase product prices may harm our brand, prospects and operating results.

We face strong competition for our products and services from a growing list of established and new competitors.

The worldwide automotive market is highly competitive today and we expect it will become even more so in the future. For example, Model 3 and Model Y face competition from existing and future automobile manufacturers in the extremely competitive entry-level premium sedan and compact SUV markets. A significant and growing number of established and new automobile manufacturers, as well as other companies, have entered, or are reported to have plans to enter, the market for electric and other alternative fuel vehicles, including hybrid, plug-in hybrid and fully electric vehicles, as well as the market for self-driving technology and other vehicle applications and software platforms. In some cases, our competitors offer or will offer electric vehicles in important markets such as China and Europe, and/or have announced an intention to produce electric vehicles exclusively at some point in the future. Many of our competitors have significantly greater or better-established resources than we do to devote to the design, development, manufacturing, distribution, promotion, sale and support of their products. Increased competition could result in our lower vehicle unit sales, price reductions, revenue shortfalls, loss of customers and loss of market share, which may harm our business, financial condition and operating results.

We also face competition in our energy generation and storage business from other manufacturers, developers, installers and service providers of competing energy technologies, as well as from large utilities. Decreases in the retail or wholesale prices of electricity from utilities or other renewable energy sources could make our products less attractive to customers and lead to an increased rate of residential customer defaults under our existing long-term leases and PPAs.

Risks Related to Our Operations

We may experience issues with lithium-ion cells or other components manufactured at Gigafactory Nevada and Gigafactory Shanghai, which may harm the production and profitability of our vehicle and energy storage products.

Our plan to grow the volume and profitability of our vehicles and energy storage products depends on significant lithium-ion battery cell production, including by our partner Panasonic at Gigafactory Nevada. In addition, we produce several vehicle components, such as battery modules and packs and drive units at Gigafactory Nevada and Gigafactory Shanghai, and we also manufacture energy storage products at Gigafactory Nevada. In the past, some of the manufacturing lines for certain product components took longer than anticipated to ramp to their full capacity, and additional bottlenecks may arise in the future as we continue to increase the production rate and introduce new lines. If we are unable to or otherwise do not maintain and grow our respective operations at Gigafactory Nevada and Gigafactory Shanghai production, or if we are unable to do so cost-effectively or hire and retain highly-skilled personnel there, our ability to manufacture our products profitably would be limited, which may harm our business and operating results.

Finally, the high volumes of lithium-ion cells and battery modules and packs manufactured at Gigafactory Nevada are stored and recycled at our various facilities. Any mishandling of battery cells may cause disruption to the operation of such facilities. While we have implemented safety procedures related to the handling of the cells, there can be no assurance that a safety issue or fire related to the cells would not disrupt our operations. Any such disruptions or issues may harm our brand and business.

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

We are subject to legal and regulatory requirements, political uncertainty and social, environmental and economic conditions in numerous jurisdictions, including markets in which we generate significant sales, over which we have little control and which are inherently unpredictable. Our operations in such jurisdictions, particularly as a company based in the U.S., create risks relating to conforming our products to regulatory and safety requirements and charging and other electric infrastructures; organizing local operating entities; establishing, staffing and managing foreign business locations; attracting local customers; navigating foreign

government taxes, regulations and permit requirements; enforceability of our contractual rights; trade restrictions, customs regulations, tariffs and price or exchange controls; and preferences in foreign nations for domestically manufactured products. Such conditions may increase our costs, impact our ability to sell our products and require significant management attention, and may harm our business if we are unable to manage them effectively.

Our business may suffer if our products or features contain defects, fail to perform as expected or take longer than expected to become fully functional.

If our products contain design or manufacturing defects that cause them not to perform as expected or that require repair, or certain features of our vehicles such as new Autopilot or FSD features take longer than expected to become enabled, are legally restricted or become subject to onerous regulation, our ability to develop, market and sell our products and services may be harmed, and we may experience delivery delays, product recalls, product liability, breach of warranty and consumer protection claims and significant warranty and other expenses. For example, we are developing self-driving and driver assist technologies to rely on vision-based sensors, unlike alternative technologies in development that additionally require other redundant sensors. There is no guarantee that any incremental changes in the specific equipment we deploy in our vehicles over time will not result in initial functional disparities from prior iterations or will perform as expected in the timeframe we anticipate, or at all.

Our products are also highly dependent on software, which is inherently complex and may contain latent defects or errors or be subject to external attacks. Issues experienced by our customers have included those related to the Model S and Model X 17-inch display screen, the panoramic roof and the 12-volt battery in the Model S, the seats and doors in the Model X and the operation of solar panels installed by us. Although we attempt to remedy any issues we observe in our products as effectively and rapidly as possible, such efforts may not be timely, may hamper production or may not completely satisfy our customers. While we have performed extensive internal testing on our products and features, we currently have a limited frame of reference by which to evaluate their long-term quality, reliability, durability and performance characteristics. There can be no assurance that we will be able to detect and fix any defects in our products prior to their sale to or installation for customers.

We may be required to defend or insure against product liability claims.

The automobile industry generally experiences significant product liability claims, and as such we face the risk of such claims in the event our vehicles do not perform or are claimed to not have performed as expected. As is true for other automakers, our vehicles have been involved and we expect in the future will be involved in accidents resulting in death or personal injury, and such accidents where Autopilot or FSD features are engaged are the subject of significant public attention. We have experienced, and we expect to continue to face, claims and regulatory scrutiny arising from or related to misuse or claimed failures of such new technologies that we are pioneering. In addition, the battery packs that we produce make use of lithium-ion cells. On rare occasions, lithium-ion cells can rapidly release the energy they contain by venting smoke and flames in a manner that can ignite nearby materials as well as other lithium-ion cells. While we have designed our battery packs to passively contain any single cell's release of energy without spreading to neighboring cells, there can be no assurance that a field or testing failure of our vehicles or other battery packs that we produce will not occur, in particular due to a high-speed crash. Likewise, as our solar energy systems and energy storage products generate and store electricity, they have the potential to fail or cause injury to people or property. Any product liability claim may subject us to lawsuits and substantial monetary damages, product recalls or redesign efforts, and even a meritless claim may require us to defend it, all of which may generate negative publicity and be expensive and time-consuming. In most jurisdictions, we generally self-insure against the risk of product liability claims for vehicle exposure, meaning that any product liability claims will likely have to be paid from company funds and not by insurance.

We will need to maintain public credibility and confidence in our long-term business prospects in order to succeed.

In order to maintain and grow our business, we must maintain credibility and confidence among customers, suppliers, analysts, investors, ratings agencies and other parties in our long-term financial viability and business prospects. Maintaining such confidence may be challenging due to our limited operating history relative to established competitors; customer unfamiliarity with our products; any delays we may experience in scaling manufacturing, delivery and service operations to meet demand; competition and uncertainty regarding the future of electric vehicles or our other products and services; our quarterly production and sales performance compared with market expectations; and other factors including those over which we have no control. In particular, Tesla's products, business, results of operations, statements and actions are well-publicized by a range of third parties. Such attention includes frequent criticism, which is often exaggerated or unfounded, such as speculation regarding the sufficiency or stability of our management team. Any such negative perceptions, whether caused by us or not, may harm our business and make it more difficult to raise additional funds if needed.

We may be unable to effectively grow, or manage the compliance, residual value, financing and credit risks related to, our various financing programs.

We offer financing arrangements for our vehicles in North America, Europe and Asia primarily ourselves and through various financial institutions. We also currently offer vehicle financing arrangements directly through our local subsidiaries in certain markets. Depending on the country, such arrangements are available for specified models

and may include operating leases directly with us

under which we typically receive only a very small portion of the total vehicle purchase price at the time of lease, followed by a stream of payments over the term of the lease. We have also offered various arrangements for customers of our solar energy systems whereby they pay us a fixed payment to lease or finance the purchase of such systems or purchase electricity generated by them. If we do not successfully monitor and comply with applicable national, state and/or local financial regulations and consumer protection laws governing these transactions, we may become subject to enforcement actions or penalties.

The profitability of any directly-leased vehicles returned to us at the end of their leases depends on our ability to accurately project our vehicles' residual values at the outset of the leases, and such values may fluctuate prior to the end of their terms depending on various factors such as supply and demand of our used vehicles, economic cycles and the pricing of new vehicles. We have made in the past and may make in the future certain adjustments to our prices from time to time in the ordinary course of business, which may impact the residual values of our vehicles and reduce the profitability of our vehicle leasing program. The funding and growth of this program also relies on our ability to secure adequate financing and/or business partners. If we are unable to adequately fund our leasing program through internal funds, partners or other financing sources, and compelling alternative financing programs are not available for our customers who may expect or need such options, we may be unable to grow our vehicle deliveries. Furthermore, if our vehicle leasing business grows substantially, our business may suffer if we cannot effectively manage the resulting greater levels of residual risk.

Similarly, we have provided resale value guarantees to vehicle customers and partners for certain financing programs, under which such counterparties may sell their vehicles back to us at certain points in time at pre-determined amounts. However, actual resale values are subject to fluctuations over the term of the financing arrangements, such as from the vehicle pricing changes discussed above. If the actual resale values of any vehicles resold or returned to us pursuant to these programs are materially lower than the pre-determined amounts we have offered, our financial condition and operating results may be harmed.

Finally, our vehicle and solar energy system financing programs and our energy storage sales programs also expose us to customer credit risk. In the event of a widespread economic downturn or other catastrophic event, our customers may be unable or unwilling to satisfy their payment obligations to us on a timely basis or at all. If a significant number of our customers default, we may incur substantial credit losses and/or impairment charges with respect to the underlying assets.

We must manage ongoing obligations under our agreement with the Research Foundation for the State University of New York relating to our Gigafactory New York.

We are party to an operating lease and a research and development agreement through the SUNY Foundation. These agreements provide for the construction and use of our Gigafactory New York, which we have primarily used for the development and production of our Solar Roof and other solar products and components, energy storage components and Supercharger components, and for other lessor-approved functions. Under this agreement, we are obligated to, among other things, meet employment targets as well as specified minimum numbers of personnel in the State of New York and in Buffalo, New York and spend or incur $5.00 billion in combined capital, operational expenses, costs of goods sold and other costs in the State of New York during a period that was initially 10 years beginning April 30, 2018. As we temporarily suspended most of our manufacturing operations at Gigafactory New York pursuant to a New York State executive order issued in March 2020 as a result of the COVID-19 pandemic, we were granted a deferral of our obligation to be compliant with our applicable targets through December 31, 2021 in an amendment memorialized in August 2021. As of December 31, 2021, we are currently in excess of such targets relating to investments and personnel in the State of New York and Buffalo. While we expect to have and grow significant operations at Gigafactory New York and the surrounding Buffalo area, any failure by us in any year over the course of the term of the agreement to meet all applicable future obligations may result in our obligation to pay a "program payment" of $41 million to the SUNY Foundation for such year, the termination of our lease at Gigafactory New York which may require us to pay additional penalties, and/or the need to adjust certain of our operations, in particular our production ramp of the Solar Roof or other components. Any of the foregoing events may harm our business, financial condition and operating results.

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

The loss of the services of any of our key employees or any significant portion of our workforce could disrupt our operations or delay the development, introduction and ramp of our products and services. In particular, we are highly dependent on the services of Elon Musk, Technoking of Tesla and our Chief Executive Officer. None of our key employees is bound by an employment agreement for any specific term and we may not be able to successfully attract and retain senior leadership necessary to grow our business. Our future success also depends upon our ability to attract, hire and retain a large number of engineering, manufacturing, marketing, sales and delivery, service, installation, technology and support personnel, especially to support our planned high-volume product sales, market and geographical expansion and technological innovations. Recruiting efforts, particularly for senior employees, may be time-consuming, which may delay the execution of our plans. If we are not successful in managing these risks, our business, financial condition and operating results may be harmed.

Employees may leave Tesla or choose other employers over Tesla due to various factors, such as a very competitive labor market for talented individuals with automotive or technology experience, or any negative publicity related to us. In regions where we

have or will have operations, particularly significant engineering and manufacturing centers, there is strong competition for individuals with skillsets needed for our business, including specialized knowledge of electric vehicles, engineering and electrical and building construction expertise. Moreover, we may be impacted by perceptions relating to reductions in force that we have conducted in the past in order to optimize our organizational structure and reduce costs and the departure of certain senior personnel for various reasons. Likewise, as a result of our temporary suspension of various U.S. manufacturing operations in the first half of 2020, in April 2020, we temporarily furloughed certain hourly employees and reduced most salaried employees' base salaries. We also compete with both mature and prosperous companies that have far greater financial resources than we do and start-ups and emerging companies that promise short-term growth opportunities.

Finally, our compensation philosophy for all of our personnel reflects our startup origins, with an emphasis on equity-based awards and benefits in order to closely align their incentives with the long-term interests of our stockholders. We periodically seek and obtain approval from our stockholders for future increases to the number of awards available under our equity incentive and employee stock purchase plans. If we are unable to obtain the requisite stockholder approvals for such future increases, we may have to expend additional cash to compensate our employees and our ability to retain and hire qualified personnel may be harmed.

We are highly dependent on the services of Elon Musk, Technoking of Tesla and our Chief Executive Officer.

We are highly dependent on the services of Elon Musk, Technoking of Tesla and our Chief Executive Officer. Although Mr. Musk spends significant time with Tesla and is highly active in our management, he does not devote his full time and attention to Tesla. Mr. Musk also currently serves as Chief Executive Officer and Chief Technical Officer of Space Exploration Technologies Corp., a developer and manufacturer of space launch vehicles, and is involved in other emerging technology ventures.

Our information technology systems or data, or those of our service providers or customers or users could be subject to cyber-attacks or other security incidents, which could result in data breaches, intellectual property theft, claims, litigation, regulatory investigations, significant liability, reputational damage and other adverse consequences.

We continue to expand our information technology systems as our operations grow, such as product data management, procurement, inventory management, production planning and execution, sales, service and logistics, dealer management, financial, tax and regulatory compliance systems. This includes the implementation of new internally developed systems and the deployment of such systems in the U.S. and abroad. While, we maintain information technology measures designed to protect us against intellectual property theft, data breaches, sabotage and other external or internal cyber-attacks or misappropriation, our systems and those of our service providers are potentially vulnerable to malware, ransomware, viruses, denial-of-service attacks, phishing attacks, social engineering, computer hacking, unauthorized access, exploitation of bugs, defects and vulnerabilities, breakdowns, damage, interruptions, system malfunctions, power outages, terrorism, acts of vandalism, security breaches, security incidents, inadvertent or intentional actions by employees or other third parties, and other cyber-attacks.

To the extent any security incident results in unauthorized access or damage to or acquisition, use, corruption, loss, destruction, alteration or dissemination of our data, including intellectual property and personal information, or our products or vehicles, or for it to be believed or reported that any of these occurred, it could disrupt our business, harm our reputation, compel us to comply with applicable data breach notification laws, subject us to time consuming, distracting and expensive litigation, regulatory investigation and oversight, mandatory corrective action, require us to verify the correctness of database contents, or otherwise subject us to liability under laws, regulations and contractual obligations, including those that protect the privacy and security of personal information. This could result in increased costs to us and result in significant legal and financial exposure and/or reputational harm.

We also rely on service providers, and similar incidents relating to their information technology systems could also have a material adverse effect on our business. There have been and may continue to be significant supply chain attacks. Our service providers, including our workforce management software provider, have been subject to ransomware and other security incidents, and we cannot guarantee that our or our service providers' systems have not been breached or that they do not contain exploitable defects, bugs, or vulnerabilities that could result in a security incident, or other disruption to, our or our service providers' systems. Our ability to monitor our service providers' security measures is limited, and, in any event, malicious third parties may be able to circumvent those security measures.

Further, the implementation, maintenance, segregation and improvement of these systems require significant management time, support and cost, and there are inherent risks associated with developing, improving and expanding our core systems as well as implementing new systems and updating current systems, including disruptions to the related areas of business operation. These risks may affect our ability to manage our data and inventory, procure parts or supplies or manufacture, sell, deliver and service

products, adequately protect our intellectual property or achieve and maintain compliance with, or realize available benefits under, tax laws and other applicable regulations.

Moreover, if we do not successfully implement, maintain or expand these systems as planned, our operations may be disrupted, our ability to accurately and/or timely report our financial results could be impaired and deficiencies may arise in our internal control over financial reporting, which may impact our ability to certify our financial results. Moreover, our proprietary information,

including intellectual property and personal information, could be compromised or misappropriated and our reputation may be adversely affected. If these systems or their functionality do not operate as we expect them to, we may be required to expend significant resources to make corrections or find alternative sources for performing these functions.

Any unauthorized control or manipulation of our products' systems could result in loss of confidence in us and our products.

Our products contain complex information technology systems. For example, our vehicles and energy storage products are designed with built-in data connectivity to accept and install periodic remote updates from us to improve or update their functionality. While we have implemented security measures intended to prevent unauthorized access to our information technology networks, our products and their systems, malicious entities have reportedly attempted, and may attempt in the future, to gain unauthorized access to modify, alter and use such networks, products and systems to gain control of, or to change, our products' functionality, user interface and performance characteristics or to gain access to data stored in or generated by our products. We encourage reporting of potential vulnerabilities in the security of our products through our security vulnerability reporting policy, and we aim to remedy any reported and verified vulnerability. However, there can be no assurance that any vulnerabilities will not be exploited before they can be identified, or that our remediation efforts are or will be successful.

Any unauthorized access to or control of our products or their systems or any loss of data could result in legal claims or government investigations. In addition, regardless of their veracity, reports of unauthorized access to our products, their systems or data, as well as other factors that may result in the perception that our products, their systems or data are capable of being hacked, may harm our brand, prospects and operating results. We have been the subject of such reports in the past.

Our business may be adversely affected by any disruptions caused by union activities.

It is not uncommon for employees of certain trades at companies such as us to belong to a union, which can result in higher employee costs and increased risk of work stoppages. Moreover, regulations in some jurisdictions outside of the U.S. mandate employee participation in industrial collective bargaining agreements and work councils with certain consultation rights with respect to the relevant companies' operations. Although we work diligently to provide the best possible work environment for our employees, they may still decide to join or seek recognition to form a labor union, or we may be required to become a union signatory. From time to time, labor unions have engaged in campaigns to organize certain of our operations, as part of which such unions have filed unfair labor practice charges against us with the National Labor Relations Board (the "NLRB"), and they may do so in the future. In September 2019, an administrative law judge issued a recommended decision for Tesla on certain issues and against us on certain others. In March 2021, the NLRB adopted a portion of the recommendation and overturned others. Tesla appealed the decision to the United States Circuit Court for the Fifth Circuit, which is currently pending. Any unfavorable ultimate outcome for Tesla may have a negative impact on the perception of Tesla's treatment of our employees. Furthermore, we are directly or indirectly dependent upon companies with unionized work forces, such as suppliers and trucking and freight companies. Any work stoppages or strikes organized by such unions could delay the manufacture and sale of our products and may harm our business and operating results.

We may choose to or be compelled to undertake product recalls or take other similar actions.

As a manufacturing company, we must manage the risk of product recalls with respect to our products. Recalls for our vehicles have resulted from, for example, industry-wide issues with airbags from a particular supplier, concerns of corrosion in certain Model S and Model X power steering assist motor bolts, suspension failures in certain Model S and Model X, issues with certain Model S and Model X media control units and torqueing of bolts to internal specifications on certain Model 3 and Model Y, misalignment of the frunk latch assembly on certain Model S and unavailability of the rearview camera display on certain Model 3. In addition to recalls initiated by us for various causes, testing of or investigations into our products by government regulators or industry groups may compel us to initiate product recalls or may result in negative public perceptions about the safety of our products, even if we disagree with the defect determination or have data that shows the actual safety risk to be non-existent. In the future, we may voluntarily or involuntarily initiate recalls if any of our products are determined by us or a regulator to contain a safety defect or be noncompliant with applicable laws and regulations, such as U.S. federal motor vehicle safety standards. Such recalls, whether voluntary or involuntary or caused by systems or components engineered or manufactured by us or our suppliers, could result in significant expense, supply chain complications and service burdens, and may harm our brand, business, prospects, financial condition and operating results.

Our current and future warranty reserves may be insufficient to cover future warranty claims.

We provide a manufacturer's warranty on all new and used Tesla vehicles we sell. We also provide certain warranties with respect to the energy generation and storage

systems we sell, including on their installation and maintenance. For components not manufactured by us, we generally pass through to our customers the applicable manufacturers' warranties, but may retain some warranty responsibilities for some or all of the life of such components. As part of our energy generation and storage system contracts, we may provide the customer with performance guarantees that guarantee that the underlying system will meet or exceed the minimum energy generation or other energy performance requirements specified in the contract. Under these performance guarantees, we generally bear the risk of electricity production or other performance shortfalls, even if they result from failures in components

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

If our warranty reserves are inadequate to cover future warranty claims on our products, our financial condition and operating results may be harmed. Warranty reserves include our management's best estimates of the projected costs to repair or to replace items under warranty, which are based on actual claims incurred to date and an estimate of the nature, frequency and costs of future claims. Such estimates are inherently uncertain and changes to our historical or projected experience, especially with respect to products such as Model 3, Model Y and Solar Roof that we have introduced relatively recently and/or that we expect to produce at significantly greater volumes than our past products, may cause material changes to our warranty reserves in the future.

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

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

Our debt agreements contain covenant restrictions that may limit our ability to operate our business.

The terms of certain of our credit facilities, including our senior asset-based revolving credit agreement, contain, and any of our other future debt agreements may contain, covenant restrictions that limit our ability to operate our business, including restrictions on our ability to, among other things, incur additional debt or issue guarantees, create liens, repurchase stock, or make other restricted payments, and make certain voluntary prepayments of specified debt. In addition, under certain circumstances we are required to comply with a fixed charge coverage ratio. As a result of these covenants, our ability to respond to changes in business and economic conditions and engage in beneficial transactions, including to obtain additional financing as needed, may be restricted. Furthermore, our failure to comply with our debt covenants could result in a default under our debt agreements, which could permit the holders to accelerate our obligation to repay the debt. If any of our debt is accelerated, we may not have sufficient funds available to repay it.

Additional funds may not be available to us when we need or want them.

Our business and our future plans for expansion are capital-intensive, and the specific timing of cash inflows and outflows may fluctuate substantially from period to period. We may need or want to raise additional funds through the issuance of equity, equity-related or debt securities or through obtaining credit from financial institutions to fund, together with our principal sources of liquidity, the costs of developing and manufacturing our current or future products, to pay any significant unplanned or accelerated expenses or for new significant strategic investments, or to refinance our significant consolidated indebtedness, even if not required to do so by the terms of such indebtedness. We cannot be certain that additional funds will be available to us on favorable terms when required, or at all. If we cannot raise additional funds when we need them, our financial condition, results of operations, business and prospects could be materially and adversely affected.

We may be negatively impacted by any early obsolescence of our manufacturing equipment.

We depreciate the cost of our manufacturing equipment over their expected useful lives. However, product cycles or manufacturing technology may change periodically, and we may decide to update our products or manufacturing processes more quickly than expected. Moreover, improvements in engineering and manufacturing expertise and efficiency may result in our ability to manufacture our products using less of our currently installed equipment. Alternatively, as we ramp and mature the production of our products to higher levels, we may discontinue the use of already installed equipment in favor of different or additional equipment. The useful life of any equipment that would be retired early as a result would be shortened, causing the depreciation on such equipment to be accelerated, and our results of operations may be harmed.

We hold and may acquire digital assets that may be subject to volatile market prices, impairment and unique risks of loss.

In January 2021, we updated our investment policy to provide us with more flexibility to further diversify and maximize returns on our cash that is not required to maintain adequate operating liquidity, allowing us to invest a portion of such cash in certain alternative reserve assets including digital assets, gold bullion, gold exchange-traded funds and other assets as specified in the future. Thereafter, we invested certain of such cash in bitcoin and also accepted bitcoin as a form of payment for sales of certain

of our products in specified regions, subject to applicable laws, and suspended this practice in May 2021. We believe in the long-term potential of digital assets both as an investment and also as a liquid alternative to cash. As with any investment and consistent with how we manage fiat-based cash and cash equivalent accounts, we may increase or decrease our holdings of digital assets at any time based on the needs of the business and on our view of market and environmental conditions.

The prices of digital assets have been in the past and may continue to be highly volatile, including as a result of various associated risks and uncertainties. For example, the prevalence of such assets is a relatively recent trend, and their long-term adoption by investors, consumers and businesses is unpredictable. Moreover, their lack of a physical form, their reliance on technology for their creation, existence and transactional validation and their decentralization may subject their integrity to the threat of malicious attacks and technological obsolescence. Finally, the extent to which securities laws or other regulations apply or may apply in the future to such assets is unclear and may change in the future. If we hold digital assets and their values decrease relative to our purchase prices, our financial condition may be harmed.

Moreover, digital assets are currently considered indefinite-lived intangible assets under applicable accounting rules, meaning that any decrease in their fair values below our carrying values for such assets at any time subsequent to their acquisition will require us to recognize impairment charges, whereas we may make no upward revisions for any market price increases until a sale, which may adversely affect our operating results in any period in which such impairment occurs. Moreover, there is no guarantee that future changes in GAAP will not require us to change the way we account for digital assets held by us.

Finally, as intangible assets without centralized issuers or governing bodies, digital assets have been, and may in the future be, subject to security breaches, cyberattacks or other malicious activities, as well as human errors or computer malfunctions that may result in the loss or destruction of private keys needed to access such assets. While we intend to take all reasonable measures to secure any digital assets, if such threats are realized or the measures or controls we create or implement to secure our digital assets fail, it could result in a partial or total misappropriation or loss of our digital assets, and our financial condition and operating results may be harmed.

There is no guarantee that we will have sufficient cash flow from our business to pay our indebtedness or that we will not incur additional indebtedness.

As of December 31, 2021, we and our subsidiaries had outstanding $5.38 billion in aggregate principal amount of indebtedness (see *Note 11, Debt*, to the consolidated financial statements included elsewhere in this Annual Report on Form 10-K). Our consolidated indebtedness may increase our vulnerability to any generally adverse economic and industry conditions. We and our subsidiaries may, subject to the limitations in the terms of our existing and future indebtedness, incur additional debt, secure existing or future debt or recapitalize our debt.

Our ability to make scheduled payments of the principal and interest on our indebtedness when due, to make payments upon conversion or repurchase demands with respect to our convertible senior notes or to refinance our indebtedness as we may need or desire, depends on our future performance, which is subject to economic, financial, competitive and other factors beyond our control. Our business may not continue to generate cash flow from operations in the future sufficient to satisfy our obligations under our existing indebtedness and any future indebtedness we may incur, and to make necessary capital expenditures. If we are unable to generate such cash flow, we may be required to adopt one or more alternatives, such as reducing or delaying investments or capital expenditures, selling assets, refinancing or obtaining additional equity capital on terms that may be onerous or highly dilutive. Our ability to refinance existing or future indebtedness will depend on the capital markets and our financial condition at such time. In addition, our ability to make payments may be limited by law, by regulatory authority or by agreements governing our future indebtedness. We may not be able to engage in these activities on desirable terms or at all, which may result in a default on our existing or future indebtedness and harm our financial condition and operating results.

We are exposed to fluctuations in currency exchange rates.

We transact business globally in multiple currencies and have foreign currency risks related to our revenue, costs of revenue, operating expenses and localized subsidiary debt denominated in currencies other than the U.S. dollar, currently primarily the Chinese yuan, euro, Canadian dollar and Norwegian krone. To the extent we have significant revenues denominated in such foreign currencies, any strengthening of the U.S. dollar would tend to reduce our revenues as measured in U.S. dollars, as we have historically experienced. In addition, a portion of our costs and expenses have been, and we anticipate will continue to be, denominated in foreign currencies, including the Chinese yuan and Japanese yen. If we do not have fully offsetting revenues in these currencies and if the value of the U.S. dollar depreciates significantly against these currencies, our costs as measured in U.S. dollars as a percent of our revenues will correspondingly increase and our margins will suffer. Moreover, while we undertake limited hedging activities intended to offset the impact of currency translation exposure, it is impossible to predict or eliminate such impact. As a result, our operating results may be harmed.

We may need to defend ourselves against intellectual property infringement claims, which may be time-consuming and expensive.

Our competitors or other third parties may hold or obtain patents, copyrights, trademarks or other proprietary rights that could prevent, limit or interfere with our ability to make, use, develop, sell or market our products and services, which could make it more difficult for us to operate our business. From time to time, the holders of such

intellectual property rights may assert their rights and urge us to take licenses and/or may bring suits alleging infringement or misappropriation of such rights, which could result in

substantial costs, negative publicity and management attention, regardless of merit. While we endeavor to obtain and protect the intellectual property rights that we expect will allow us to retain or advance our strategic initiatives, there can be no assurance that we will be able to adequately identify and protect the portions of intellectual property that are strategic to our business, or mitigate the risk of potential suits or other legal demands by our competitors. Accordingly, we may consider the entering into licensing agreements with respect to such rights, although no assurance can be given that such licenses can be obtained on acceptable terms or that litigation will not occur, and such licenses and associated litigation could significantly increase our operating expenses. In addition, if we are determined to have or believe there is a high likelihood that we have infringed upon a third party's intellectual property rights, we may be required to cease making, selling or incorporating certain components or intellectual property into the goods and services we offer, to pay substantial damages and/or license royalties, to redesign our products and services and/or to establish and maintain alternative branding for our products and services. In the event that we are required to take one or more such actions, our brand, business, financial condition and operating results may be harmed.

Increased scrutiny and changing expectations from stakeholders with respect to the Company's ESG practices may result in additional costs or risks.

Companies across many industries are facing increasing scrutiny related to their ESG practices. Investor advocacy groups, certain institutional investors, investment funds and other influential investors are also increasingly focused on ESG practices and in recent years have placed increasing importance on the non-financial impacts of their investments. While our mission is to accelerate the world's transition to sustainable energy, if our ESG practices do not meet investor or other industry stakeholder expectations, which continue to evolve, we may incur additional costs and our brand, ability to attract and retain qualified employees and business may be harmed.

Our operations could be adversely affected by events outside of our control, such as natural disasters, wars or health epidemics.

We may be impacted by natural disasters, wars, health epidemics, weather conditions, the long-term effects of climate change, power outages or other events outside of our control. For example, our Fremont Factory and Gigafactory Nevada are located in seismically active regions in Northern California and Nevada, and our Gigafactory Shanghai is located in a flood-prone area. Moreover, the area in which our Gigafactory Texas is located experienced severe winter storms in the first quarter of 2021 that had a widespread impact on utilities and transportation. If major disasters such as earthquakes, floods or other climate-related events occur, or our information system or communication breaks down or operates improperly, our headquarters and production facilities may be seriously damaged, or we may have to stop or delay production and shipment of our products. In addition, the global COVID-19 pandemic has impacted economic markets, manufacturing operations, supply chains, employment and consumer behavior in nearly every geographic region and industry across the world, and we have been, and may in the future be, adversely affected as a result. We may incur expenses or delays relating to such events outside of our control, which could have a material adverse impact on our business, operating results and financial condition.

Risks Related to Government Laws and Regulations

Demand for our products and services may be impacted by the status of government and economic incentives supporting the development and adoption of such products.

Government and economic incentives that support the development and adoption of electric vehicles in the U.S. and abroad, including certain tax exemptions, tax credits and rebates, may be reduced, eliminated or exhausted from time to time. For example, previously available incentives favoring electric vehicles in areas including Ontario, Canada, Germany, Hong Kong, Denmark and California have expired or were cancelled or temporarily unavailable, and in some cases were not eventually replaced or reinstituted, which may have negatively impacted sales. Certain government and economic incentives may also be implemented that provide disproportionate benefits to manufacturers who assemble domestically, have local suppliers or have other characteristics that may not apply to Tesla. Any similar developments could have some negative impact on demand for our vehicles, and we and our customers may have to adjust to them.

In addition, certain governmental rebates, tax credits and other financial incentives that are currently available with respect to our solar and energy storage product businesses allow us to lower our costs and encourage customers to buy our products and investors to invest in our solar financing funds. However, these incentives may expire when the allocated funding is exhausted, reduced or terminated as renewable energy adoption rates increase, sometimes without warning. For example, the U.S. federal government currently offers certain tax credits for the installation of solar power facilities and energy storage systems that are charged from a co-sited solar power facility; however, these tax credits are currently scheduled to decline and/or expire in 2023 and beyond. Likewise, in jurisdictions where net metering is currently available, our customers receive bill credits from utilities for energy that their solar energy systems generate and export to the grid in excess of the electric load they use. The benefit available under net metering has been or has been proposed to be reduced, altered or eliminated in several jurisdictions, and has also been contested and may continue to be contested before the Federal Energy Regulatory Commission. Any reductions or terminations of such incentives may harm our business, prospects, financial condition and operating

results by making our products less competitive for customers,

increasing our cost of capital and adversely impacting our ability to attract investment partners and to form new financing funds for our solar and energy storage assets.

Finally, we and our fund investors claim these U.S. federal tax credits and certain state incentives in amounts based on independently appraised fair market values of our solar and energy storage systems. Some governmental authorities have audited such values and in certain cases have determined that these values should be lower, and they may do so again in the future. Such determinations may result in adverse tax consequences and/or our obligation to make indemnification or other payments to our funds or fund investors.

We are subject to evolving laws and regulations that could impose substantial costs, legal prohibitions or unfavorable changes upon our operations or products.

As we grow our manufacturing operations in additional regions, we are or will be subject to complex environmental, manufacturing, health and safety laws and regulations at numerous jurisdictional levels in the U.S., China, Germany and other locations abroad, including laws relating to the use, handling, storage, recycling, disposal and/or human exposure to hazardous materials, product material inputs and post-consumer products and with respect to constructing, expanding and maintaining our facilities. New, or changes in, environmental and climate change laws, regulations or rules could also lead to increased costs of compliance, including remediations of any discovered issues, and changes to our operations, which may be significant, and any failures to comply could result in significant expenses, delays or fines. In addition, as we have increased our employee headcount and operations, we are and may continue to be subject to increased scrutiny, including litigation and government investigations relating to allegations such as discrimination and workplace misconduct, that we will need to defend against. If we are unable to successfully defend ourselves in such litigation or government investigations, it may harm our brand, ability to attract and retain qualified employees, business and financial condition. We are also subject to laws and regulations applicable to the supply, manufacture, import, sale and service of our products both domestically and abroad. For example, in countries outside of the U.S., we are required to meet standards relating to vehicle safety, fuel economy and emissions that are often materially different from requirements in the U.S., thus resulting in additional investment into the vehicles and systems to ensure regulatory compliance in those countries. This process may include official review and certification of our vehicles by foreign regulatory agencies prior to market entry, as well as compliance with foreign reporting and recall management systems requirements.

In particular, we offer in our vehicles Autopilot and FSD Capability features that today assist drivers with certain tedious and potentially dangerous aspects of road travel, but which currently require drivers to remain fully engaged in the driving operation. We are continuing to develop our FSD Capability technology with the goal of achieving fully self-driving capability in the future. There are a variety of international, federal and state regulations that may apply to the sale, registration and operation of fully self-driving vehicles, which include many existing vehicle standards that were not originally intended to apply to vehicles that may not have a human driver. Such regulations continue to rapidly change, which increases the likelihood of a patchwork of complex or conflicting regulations, or may delay products or restrict self-driving features and their availability, which could adversely affect our business.

Finally, as a manufacturer, installer and service provider with respect to solar generation and energy storage systems, a supplier of electricity generated and stored by certain of the solar energy and energy storage systems we install for customers, and a provider of grid services through virtual power plant models, we are impacted by federal, state and local regulations and policies concerning electricity pricing, the interconnection of electricity generation and storage equipment with the electrical grid and the sale of electricity generated by third party-owned systems. If regulations and policies that adversely impact the interconnection or use of our solar and energy storage systems are introduced, they could deter potential customers from purchasing our solar and energy storage products and services, threaten the economics of our existing contracts and cause us to cease solar and energy storage system sales and services in the relevant jurisdictions, which may harm our business, financial condition and operating results.

Any failure by us to comply with a variety of U.S. and international privacy and consumer protection laws may harm us.

Any failure by us or our vendor or other business partners to comply with our public privacy notice or with federal, state or international privacy, data protection or security laws or regulations relating to the processing, collection, use, retention, security and transfer of personally identifiable information could result in regulatory or litigation-related actions against us, legal liability, fines, damages, ongoing audit requirements and other significant costs. Substantial expenses and operational changes may be required in connection with maintaining compliance with such laws, and even an unsuccessful challenge by customers or regulatory authorities of our activities could result in adverse publicity and could require a costly response from and defense by us. In addition, certain emerging privacy laws are still subject to a high degree of uncertainty as to their interpretation, application and impact, and may require extensive system and operational changes, be difficult to implement, increase our operating costs, adversely impact the cost or attractiveness of the products or services we offer, or result in adverse publicity and harm our reputation. For example, the General Data Protection Regulation applies to the processing of personal information collected from individuals located in the European Union, and has created new compliance obligations and significantly

increased fines for noncompliance. Similarly, the California Consumer Privacy Act imposes certain legal obligations on our use and processing of personal information related to California residents. Finally, new privacy and cybersecurity laws have come into effect in China. Notwithstanding our efforts to protect the security and integrity of our customers' personal information, we may be required to expend significant resources to comply with data

breach requirements if, for example, third parties improperly obtain and use the personal information of our customers or we otherwise experience a data loss with respect to customers' personal information. A major breach of our network security and systems may result in fines, penalties and damages and harm our brand, prospects and operating results.

We could be subject to liability, penalties and other restrictive sanctions and adverse consequences arising out of certain governmental investigations and proceedings.

We are cooperating with certain government investigations as discussed in *Note 15, Commitments and Contingencies*, to the consolidated financial statements included elsewhere in this Annual Report on Form 10-K. To our knowledge, no government agency in any such ongoing investigation has concluded that any wrongdoing occurred. However, we cannot predict the outcome or impact of any such ongoing matters, and there exists the possibility that we could be subject to liability, penalties and other restrictive sanctions and adverse consequences if the SEC, the U.S. Department of Justice or any other government agency were to pursue legal action in the future. Moreover, we expect to incur costs in responding to related requests for information and subpoenas, and if instituted, in defending against any governmental proceedings.

For example, on October 16, 2018, the U.S. District Court for the Southern District of New York entered a final judgment approving the terms of a settlement filed with the Court on September 29, 2018, in connection with the actions taken by the SEC relating to Mr. Musk's statement on August 7, 2018 that he was considering taking Tesla private. Pursuant to the settlement, we, among other things, paid a civil penalty of $20 million, appointed an independent director as the chair of our board of directors, appointed two additional independent directors to our board of directors and made further enhancements to our disclosure controls and other corporate governance-related matters. On April 26, 2019, this settlement was amended to clarify certain of the previously-agreed disclosure procedures, which was subsequently approved by the Court. All other terms of the prior settlement were reaffirmed without modification. Although we intend to continue to comply with the terms and requirements of the settlement, if there is a lack of compliance or an alleged lack of compliance, additional enforcement actions or other legal proceedings may be instituted against us.

We may face regulatory challenges to or limitations on our ability to sell vehicles directly.

While we intend to continue to leverage our most effective sales strategies, including sales through our website, we may not be able to sell our vehicles through our own stores in certain states in the U.S. with laws that may be interpreted to impose limitations on this direct-to-consumer sales model. It has also been asserted that the laws in some states limit our ability to obtain dealer licenses from state motor vehicle regulators, and such assertions persist. In certain locations, decisions by regulators permitting us to sell vehicles have been, and may be, challenged by dealer associations and others as to whether such decisions comply with applicable state motor vehicle industry laws. We have prevailed in many of these lawsuits and such results have reinforced our continuing belief that state laws were not intended to apply to a manufacturer that does not have franchise dealers. In some states, there have also been regulatory and legislative efforts by dealer associations to propose laws that, if enacted, would prevent us from obtaining dealer licenses in their states given our current sales model. A few states have passed legislation that clarifies our ability to operate, but at the same time limits the number of dealer licenses we can obtain or stores that we can operate. The application of state laws applicable to our operations continues to be difficult to predict.

Internationally, there may be laws in jurisdictions we have not yet entered or laws we are unaware of in jurisdictions we have entered that may restrict our sales or other business practices. Even for those jurisdictions we have analyzed, the laws in this area can be complex, difficult to interpret and may change over time. Continued regulatory limitations and other obstacles interfering with our ability to sell vehicles directly to consumers may harm our financial condition and operating results.

Risks Related to the Ownership of Our Common Stock

The trading price of our common stock is likely to continue to be volatile.

The trading price of our common stock has been highly volatile and could continue to be subject to wide fluctuations in response to various factors, some of which are beyond our control. Our common stock has experienced over the last 52 weeks an intra-day trading high of $1,243.49 per share and a low of $539.49 per share. The stock market in general, and the market for technology companies in particular, has experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of those companies. In particular, a large proportion of our common stock has been historically and may in the future be traded by short sellers which may put pressure on the supply and demand for our common stock, further influencing volatility in its market price. Public perception and other factors outside of our control may additionally impact the stock price of companies like us that garner a disproportionate degree of public attention, regardless of actual operating performance. In addition, in the past, following periods of volatility in the overall market or the market price of our shares, securities class action litigation has been filed against us. While we defend such actions vigorously, any judgment against us or any future stockholder litigation could result in substantial costs and a diversion of our management's

attention and resources.

Our financial results may vary significantly from period to period due to fluctuations in our operating costs and other factors.

We expect our period-to-period financial results to vary based on our operating costs, which we anticipate will fluctuate as the pace at which we continue to design, develop and manufacture new products and increase production capacity by expanding our current manufacturing facilities and adding future facilities, may not be consistent or linear between periods. Additionally, our revenues from period to period may fluctuate as we introduce existing products to new markets for the first time and as we develop and introduce new products. As a result of these factors, we believe that quarter-to-quarter comparisons of our financial results, especially in the short term, are not necessarily meaningful and that these comparisons cannot be relied upon as indicators of future performance. Moreover, our financial results may not meet expectations of equity research analysts, ratings agencies or investors, who may be focused only on short-term quarterly financial results. If any of this occurs, the trading price of our stock could fall substantially, either suddenly or over time.

We may fail to meet our publicly announced guidance or other expectations about our business, which could cause our stock price to decline.

We may provide from time to time guidance regarding our expected financial and business performance. Correctly identifying key factors affecting business conditions and predicting future events is inherently an uncertain process, and our guidance may not ultimately be accurate and has in the past been inaccurate in certain respects, such as the timing of new product manufacturing ramps. Our guidance is based on certain assumptions such as those relating to anticipated production and sales volumes (which generally are not linear throughout a given period), average sales prices, supplier and commodity costs and planned cost reductions. If our guidance varies from actual results due to our assumptions not being met or the impact on our financial performance that could occur as a result of various risks and uncertainties, the market value of our common stock could decline significantly.

Transactions relating to our convertible senior notes may dilute the ownership interest of existing stockholders, or may otherwise depress the price of our common stock.

The conversion of some or all of the convertible senior notes issued by us or our subsidiaries would dilute the ownership interests of existing stockholders to the extent we deliver shares upon conversion of any of such notes by their holders, and we may be required to deliver a significant number of shares. Any sales in the public market of the common stock issuable upon such conversion could adversely affect their prevailing market prices. In addition, the existence of the convertible senior notes may encourage short selling by market participants because the conversion of such notes could be used to satisfy short positions, or the anticipated conversion of such notes into shares of our common stock could depress the price of our common stock.

If Elon Musk were forced to sell shares of our common stock that he has pledged to secure certain personal loan obligations, such sales could cause our stock price to decline.

Certain banking institutions have made extensions of credit to Elon Musk, our Chief Executive Officer, a portion of which was used to purchase shares of common stock in certain of our public offerings and private placements at the same prices offered to third-party participants in such offerings and placements. We are not a party to these loans, which are partially secured by pledges of a portion of the Tesla common stock currently owned by Mr. Musk. If the price of our common stock were to decline substantially, Mr. Musk may be forced by one or more of the banking institutions to sell shares of Tesla common stock to satisfy his loan obligations if he could not do so through other means. Any such sales could cause the price of our common stock to decline further.

Anti-takeover provisions contained in our governing documents, applicable laws and our convertible senior notes could impair a takeover attempt.

Our certificate of incorporation and bylaws afford certain rights and powers to our board of directors that may facilitate the delay or prevention of an acquisition that it deems undesirable. We are also subject to Section 203 of the Delaware General Corporation Law and other provisions of Delaware law that limit the ability of stockholders in certain situations to effect certain business combinations. In addition, the terms of our convertible senior notes may require us to repurchase such notes in the event of a fundamental change, including a takeover of our company. Any of the foregoing provisions and terms that has the effect of delaying or deterring a change in control could limit the opportunity for our stockholders to receive a premium for their shares of our common stock, and could also affect the price that some investors are willing to pay for our common stock.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

We are headquartered in Austin, Texas. Our principal facilities include a large number of properties in North America, Europe and Asia utilized for manufacturing and assembly, warehousing, engineering, retail and service locations, Supercharger sites and administrative and sales offices. Our facilities are used to support both of our reporting segments, and are suitable and adequate for the conduct of our business. We primarily lease such facilities with the exception of some manufacturing facilities. The following table sets forth the location of our primary owned and leased manufacturing facilities.

Primary Manufacturing Facilities	Location	Owned or Leased
Gigafactory Texas	Austin, Texas	Owned
Fremont Factory	Fremont, California	Owned
Gigafactory Nevada	Sparks, Nevada	Owned
Gigafactory Berlin	Grunheide, Germany	Owned
Gigafactory Shanghai	Shanghai, China	*
Gigafactory New York	Buffalo, New York	Leased

* We own the building and the land use rights with an initial term of 50 years. The land use rights are treated as operating lease right-of-use assets.

ITEM 3. LEGAL PROCEEDINGS

For a description of our material pending legal proceedings, please see *Note 15, Commitments and Contingencies*, to the consolidated financial statements included elsewhere in this Annual Report on Form 10-K.

In addition, each of the matters below is being disclosed pursuant to Item 103 of Regulation S-K because it relates to environmental regulations and aggregate civil penalties that we currently believe could potentially exceed $1 million. We believe that any proceeding that is material to our business or financial condition is likely to have potential penalties far in excess of such amount.

The German Umweltbundesamt has issued our subsidiary in Germany a notice and fine in the amount of 12 million euro alleging its non-compliance under applicable laws relating to market participation notifications and take-back obligations with respect to end-of-life battery products required thereunder. In response to Tesla’s objection, the German Umweltbundesamt issued Tesla a revised fine notice dated April 29, 2021 in which it reduced the original fine amount to 1.45 million euro. This is primarily relating to administrative requirements, but Tesla has continued to take back battery packs, and although we cannot predict the outcome of this matter, including the final amount of any penalties, we filed a new objection in June 2021 and it is not expected to have a material adverse impact on our business.

In April 2021, we received a notice from the Environmental Protection Agency (the “EPA”) alleging that Tesla failed to provide records demonstrating compliance with certain requirements under the applicable National Emission Standards for Hazardous Air Pollutants under the Clean Air Act of 1963, as amended, relating to Surface Coating of Automobiles and Light-Duty Trucks regulations. Tesla has responded to all information requests from the EPA and refutes the allegations. Tesla continues to cooperate with the EPA in resolving this matter, and it is not currently expected to have a material adverse impact on our business.

District attorneys in certain California counties are conducting an investigation into Tesla's waste segregation practices pursuant to Cal. Health & Saf. Code section 25100 et seq. and Cal. Civil Code § 1798.80. Tesla has implemented various remedial measures, including conducting training and audits, and enhancements to its site waste management programs. While the outcome of this matter cannot be determined at this time, it is not currently expected to have a material adverse impact on our business.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

PART II

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

Market Information

Our common stock has traded on The NASDAQ Global Select Market under the symbol "TSLA" since it began trading on June 29, 2010. Our initial public offering was priced at $3.40 per share on June 28, 2010 as adjusted to give effect to the five-for-one stock split effected in the form of a stock dividend in August 2020.

Holders

As of January 31, 2022, there were 7,051 holders of record of our common stock. A substantially greater number of holders of our common stock are "street name" or beneficial holders, whose shares are held by banks, brokers and other financial institutions.

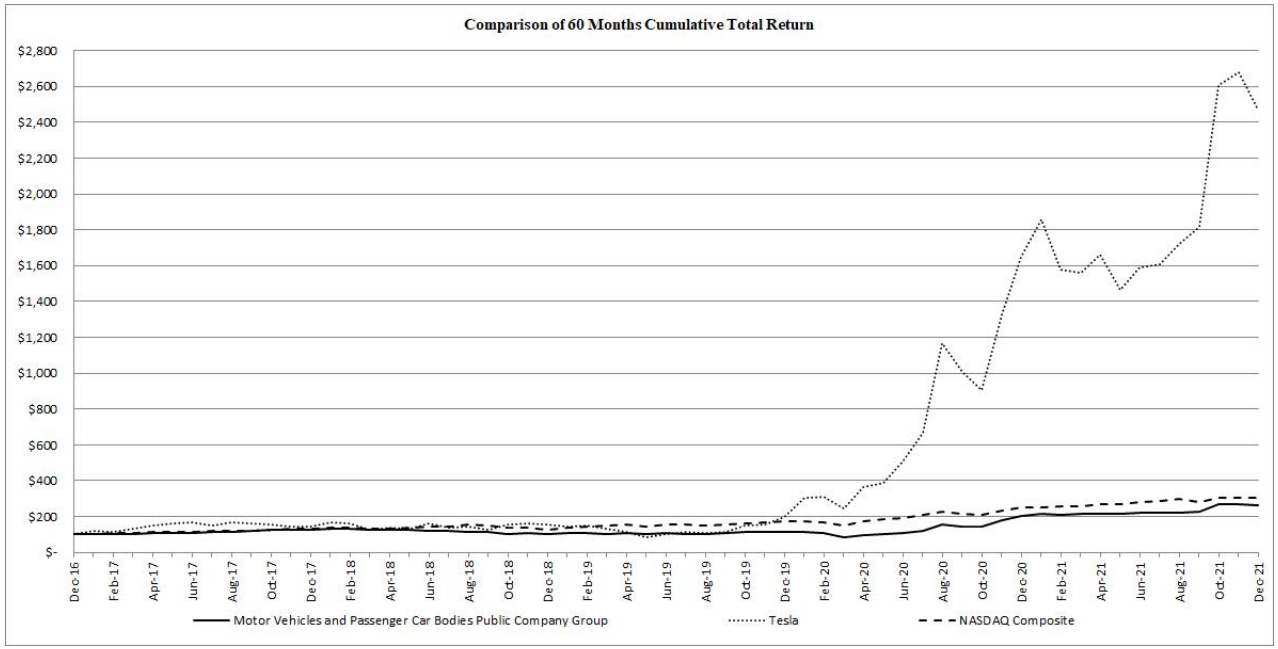
Dividend Policy

We have never declared or paid cash dividends on our common stock. We currently do not anticipate paying any cash dividends in the foreseeable future. Any future determination to declare cash dividends will be made at the discretion of our board of directors, subject to applicable laws, and will depend on our financial condition, results of operations, capital requirements, general business conditions and other factors that our board of directors may deem relevant.

Stock Performance Graph

This performance graph shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or incorporated by reference into any filing of Tesla, Inc. under the Securities Act of 1933, as amended (the "Securities Act"), or the Exchange Act, except as shall be expressly set forth by specific reference in such filing.

The following graph shows a comparison, from January 1, 2017 through December 31, 2021, of the cumulative total return on our common stock, The NASDAQ Composite Index and a group of all public companies sharing the same SIC code as us, which is SIC code 3711, "Motor Vehicles and Passenger Car Bodies" (Motor Vehicles and Passenger Car Bodies Public Company Group). Such returns are based on historical results and are not intended to suggest future performance. Data for The NASDAQ Composite Index and the Motor Vehicles and Passenger Car Bodies Public Company Group assumes an investment of $100 on January 1, 2017 and reinvestment of dividends. We have never declared or paid cash dividends on our common stock nor do we anticipate paying any such cash dividends in the foreseeable future.


Comparison of 60 Months Cumulative Total Return
$2,800
$2,600
$2,400
$2,200
$2,000
$1,800
$1,600
$1,400
$1,200
$1,000
$800
$600
$400
$200
$-
Dec-16
Feb-17
Apr-17
Jun-17
Aug-17
Oct-17
Dec-17
Feb-18
Apr-18
Jun-18
Aug-18
Oct-18
Dec-18
Feb-19
Apr-19
Jun-19
Aug-19
Oct-19
Dec-19
Feb-20
Apr-20
Jun-20
Aug-20
Oct-20
Dec-20
Feb-21
Apr-21
Jun-21
Aug-21
Oct-21
Dec-21
Motor Vehicles and Passenger Car Bodies Public Company Group
Tesla
NASDAQ Composite

Unregistered Sales of Equity Securities and Use of Proceeds

In connection with the offering of 2.00% Convertible Senior Notes due 2024 in May 2019, we sold warrants to each of Société Générale, Wells Fargo Bank, National Association, Goldman, Sachs & Co. LLC and Credit Suisse Capital LLC. On October 26, 2021, we agreed with each of Société Générale, Wells Fargo Bank, National Association and Credit Suisse Capital LLC to partially terminate such warrants, and in connection with such partial termination, we issued an aggregate of 2,711,289 shares of our common stock to Société Générale, Wells Fargo Bank, National Association and Credit Suisse Capital LLC. Such shares were issued pursuant to an exemption from registration provided by Rule 3(a)(9) of the Securities Act of 1933.

Purchases of Equity Securities by the Issuer and Affiliated Purchasers

None.

ITEM 6. [RESERVED]

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

The following discussion and analysis should be read in conjunction with the consolidated financial statements and the related notes included elsewhere in this Annual Report on Form 10-K. For discussion related to changes in financial condition and the results of operations for fiscal year 2019-related items, refer to Part II, Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations in our Annual Report on Form 10-K for fiscal year 2020, which was filed with the Securities and Exchange Commission on February 8, 2021.

Overview and 2021 Highlights

Our mission is to accelerate the world's transition to sustainable energy. We design, develop, manufacture, lease and sell high-performance fully electric vehicles, solar energy generation systems and energy storage products. We also offer maintenance, installation, operation, financial and other services related to our products. Additionally, we are increasingly focused on products and services based on artificial intelligence, robotics and automation.

In 2021, we produced 930,422 vehicles and delivered 936,222 vehicles. We are currently focused on increasing vehicle production and capacity, improving and developing battery technologies, improving our FSD capabilities, increasing the affordability and efficiency of our vehicles and expanding our global infrastructure.

In 2021, we deployed 3.99 GWh of energy storage products and 345 megawatts of solar energy systems. We are currently focused on ramping production of energy storage products, improving our Solar Roof installation capability and efficiency, and increasing market share of retrofit and new build solar energy systems.

In 2021, we recognized total revenues of $53.82 billion, representing a 71% increase compared to the prior year. We continue to ramp production, build new manufacturing capacity and expand our operations to enable increased deliveries and deployments of our products and further revenue growth.

In 2021, our net income attributable to common stockholders was $5.52 billion, representing a favorable change of $4.80 billion, compared to the prior year. We continue to focus on improving our profitability through production and operational efficiencies.

We ended 2021 with $17.58 billion in cash and cash equivalents, representing a decrease of $1.81 billion from the end of 2020. Our cash flows provided by operating activities during 2021 was $11.50 billion, representing an increase of $5.55 billion compared to $5.94 billion during 2020, and capital expenditures amounted to $6.48 billion during 2021, compared to $3.16 billion during 2020. Sustained growth has allowed our business to generally fund itself, but we will continue investing in a number of capital-intensive projects in upcoming periods.

Management Opportunities, Challenges and Risks and 2022 Outlook

Impact of COVID-19 Pandemic

Beginning in the first quarter of 2021, there has been a trend in many parts of the world of increasing availability and administration of vaccines against COVID-19, as well as an easing of restrictions on social, business, travel and government activities and functions. On the other hand, infection rates and regulations continue to fluctuate in various regions and there are ongoing global impacts resulting from the pandemic, including challenges and increases in costs for logistics and supply chains, such as increased port congestion, intermittent supplier delays and a shortfall of semiconductor supply. We have also previously been affected by temporary manufacturing closures, employment and compensation adjustments, and impediments to administrative activities supporting our product deliveries and deployments.

Ultimately, we cannot predict the duration of the COVID-19 pandemic. We will continue to monitor macroeconomic conditions to remain flexible and to optimize and evolve our business as appropriate, and we will have to accurately project demand and infrastructure requirements globally and deploy our production, workforce and other resources accordingly.

Automotive—Production

The following is a summary of the status of production of each of our announced vehicle models in production and under development, as of the date of this Annual Report on Form 10-K:

Production Location	Vehicle Model(s)	Production Status
Fremont Factory	Model S / Model X	Active
	Model 3 / Model Y	Active
Gigafactory Shanghai	Model 3 / Model Y	Active
Gigafactory Berlin	Model Y	Equipment test
Gigafactory Texas	Model Y	Equipment test
	Cybertruck	In development
TBD	Tesla Semi	In development
TBD	Tesla Roadster	In development

We are focused on ramping all of our production vehicles to their installed production capacities as well as increasing capacity at our current factories. Our current production continues to be affected by the industry-wide semiconductor and other component shortages, requiring additional workaround manufacturing and production design solutions to be implemented which may be difficult to sustain. Builds of Model Y in Gigafactory Texas and equipment testing through the vehicle production process in Gigafactory Berlin started in late 2021. The next phase of production growth will depend on the testing and ramp at Gigafactory Berlin and Gigafactory Texas, as well as our ability to add to our available sources of battery cell supply by manufacturing our own cells that we are developing to have high-volume output, lower capital and production costs and longer range. Consistent with our approach of innovating manufacturing techniques at our new factories, we expect as well to pioneer new methods related to the mass production of these cells and our unique structural battery pack concept. Our goals are to improve vehicle performance, decrease production costs and increase affordability.

However, these plans are subject to uncertainties inherent in establishing and ramping manufacturing operations, which may be exacerbated by the number of concurrent international projects, any industry-wide component constraints which may increase the number of manufacturing and production design workaround solutions required, labor shortages and any future impact from events outside of our control such as the COVID-19 pandemic. Moreover, we must meet ambitious technological targets with our plans for battery cells as well as for iterative manufacturing and design improvements for our vehicles with each new factory.

Automotive—Demand and Sales

Our cost reduction efforts and additional localized procurement and manufacturing are key to our vehicles' affordability, and for example, have allowed us to competitively price our vehicles in China. In addition to ramping production in 2022, we will also continue to generate demand and brand awareness by improving our vehicles' performance and functionality, including through products based on artificial intelligence such as Autopilot and FSD, and other software features. Moreover, we expect to continue to benefit from a spike in demand in the automotive industry generally, as well as ongoing electrification of the automotive sector and increasing environmental awareness.

However, we operate in a cyclical industry that is sensitive to trade, environmental and political uncertainty, all of which may also be compounded by any future global impact from the COVID-19 pandemic. Moreover, as additional competitors enter the marketplace and help bring the world closer to sustainable transportation, we will have to continue to execute well to maintain our momentum.

Automotive—Deliveries and Customer Infrastructure

As our deliveries increase, we must work constantly to prevent our vehicle delivery capability from becoming a bottleneck on our total deliveries. Increasing the exports of vehicles manufactured at Gigafactory Shanghai has been effective in mitigating the strain on our deliveries in markets outside of the United States, and we expect to benefit further from situating additional factories closer to local markets. As we expand our manufacturing operations globally, we will have to continue to increase and staff our delivery, servicing and charging infrastructure accordingly, maintain our vehicle reliability and optimize our Supercharger locations to ensure cost effectiveness and customer satisfaction. In particular, we remain focused on increasing the capability and efficiency of our servicing operations.

Energy Generation and Storage Demand, Production and Deployment

The long-term success of this business is dependent upon increasing margins through greater volumes. We continue to increase the production of our energy storage products to meet high levels of demand, including beginning construction of our Megafactory in Lathrop, California, but such production is also sensitive to global component constraints. For Megapack, energy storage deployments can vary meaningfully quarter to quarter depending on the timing of specific project milestones. For Powerwall, better availability and growing grid stability concerns drive higher customer interest, and we are emphasizing cross-selling with our residential solar energy products. We remain committed to growing our retrofit solar energy business by offering a low-cost and simplified online ordering experience. In addition, we continue to improve our installation capabilities and price efficiencies for Solar Roof by on-boarding and training new installers, as well as collaborating with real estate developers and builders on new homes to reduce installation time and costs. As these product lines grow, we will have to maintain adequate battery cell supply for our energy storage products and hire additional personnel, particularly skilled electricians, to support the ramp of Solar Roof.

Cash Flow and Capital Expenditure Trends

Our capital expenditures are typically difficult to project beyond the short term given the number and breadth of our core projects at any given time, and may further be impacted by uncertainties in future global market conditions. We are simultaneously ramping new products in the new Model S and Model X, Megapack and Solar Roof, ramping manufacturing facilities on three continents and piloting the development and manufacture of new battery cell technologies, and the pace of our capital spend may vary depending on overall priority among projects, the pace at which we meet milestones, production adjustments to and among our various products, increased capital efficiencies and the addition of new projects. Owing and subject to the foregoing as well as the pipeline of announced projects under development and all other continuing infrastructure growth, we currently expect our capital expenditures to be between $5.00 to $7.00 billion in 2022 and each of the next two fiscal years.

Our business has recently been consistently generating cash flow from operations in excess of our level of capital spend, and with better working capital management resulting in shorter days sales outstanding than days payable outstanding, our sales growth is also facilitating positive cash generation. On the other hand, we are likely to see heightened levels of capital expenditures during certain periods depending on the specific pace of our capital-intensive projects and rising material prices and increasing supply chain and labor expenses resulting from changes in global trade conditions and labor availability associated with the COVID-19 pandemic. Moreover, as our stock price has significantly increased, we have seen higher levels of early conversions of “in-the-money” convertible senior notes, which obligates us to deliver cash and or shares pursuant to the terms of those notes. Overall, we expect our ability to be self-funding to continue as long as macroeconomic factors support current trends in our sales.

Operating Expense Trends

As long as we see expanding sales, and excluding the potential impact of macroeconomic conditions including increased labor costs and impairment charges on certain assets as explained below, we generally expect operating expenses relative to revenues to decrease as we continue to increase operational efficiency and process automation. We expect operating expenses to grow in 2022 as we are expanding our operations globally.

In the first quarter of 2021, we invested an aggregate $1.50 billion in bitcoin. We believe in the long-term potential of digital assets both as an investment and also as a liquid alternative to cash. As with any investment and consistent with how we manage fiat-based cash and cash-equivalent accounts, we may increase or decrease our holdings of digital assets at any time based on the needs of the business and our view of market and environmental conditions. Digital assets are considered indefinite-lived intangible assets under applicable accounting rules. Accordingly, any decrease in their fair values below our carrying values for such assets at any time subsequent to their acquisition will require us to recognize impairment charges, whereas we may make no upward revisions for any market price increases until a sale. For any digital assets held now or in the future, these charges may negatively impact our profitability in the periods in which such impairments occur even if the overall market values of these assets increase. For example, in the year ended December 31, 2021, we recorded approximately $101 million of impairment losses resulting from changes to the carrying value of our bitcoin and gains of $128 million on certain sales of bitcoin by us.

Critical Accounting Policies and Estimates

The consolidated financial statements are prepared in accordance with accounting principles generally accepted in the 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. 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 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 may be affected.

Due to the COVID-19 pandemic, there has been uncertainty and disruption in the global economy and financial markets. The estimates used for, but not limited to, determining significant economic incentive for resale value guarantee arrangements, sales return reserves, the collectability of accounts receivable, inventory valuation, fair value of long-lived assets, goodwill, fair value of financial instruments, fair value and residual value of operating lease vehicles and solar energy systems subject to leases could be impacted. We have assessed the impact and are not aware of any specific events or circumstances that required an update to our estimates and assumptions or materially affected the carrying value of our assets or liabilities as of the date of issuance of this Annual Report on Form 10-K. These estimates may change as new events occur and additional information is obtained. Actual results could differ materially from these estimates under different assumptions or conditions.

Revenue Recognition

Automotive Sales without Resale Value Guarantee

Automotive sales revenue includes revenues related to deliveries of new vehicles and pay-per-use charges, and specific other features and services that meet the definition of a performance obligation under ASC 606, including access to our Supercharger network, internet connectivity, FSD features and over-the-air software updates. We recognize revenue on automotive sales upon delivery to the customer, which is when the control of a vehicle transfers. Payments are typically received at the point control transfers or in accordance with payment terms customary to the business. Other features and services such as access to our Supercharger network, internet connectivity and over-the-air software updates are provisioned upon control transfer of a vehicle and recognized over time on a straight-line basis as we have a stand-ready obligation to deliver such services to the customer. We recognize revenue related to these other features and services over the performance period, which is generally the estimated useful life of the vehicle. Revenue related to FSD features is recognized when functionality is delivered to the customer. For our obligations related to automotive sales, we estimate standalone selling price by considering costs used to develop and deliver the service, third-party pricing of similar options and other information that may be available.

At the time of revenue recognition, we reduce the transaction price and record a sales return reserve against revenue for estimated variable consideration related to future product returns. Such return rate estimates are based on historical experience and are immaterial in all periods presented. In addition, any fees that are paid or payable by us to a customer's lender when we arrange the financing are recognized as an offset against automotive sales revenue.

Costs to obtain a contract mainly relate to commissions paid to our sales personnel for the sale of vehicles. Commissions are not paid on other obligations such as access to our Supercharger network, internet connectivity, FSD features and over-the-air software updates. As our contract costs related to automotive sales are typically fulfilled within one year, the costs to obtain a contract are expensed as incurred. Amounts billed to customers related to shipping and handling are classified as automotive sales revenue, and we have elected to recognize the cost for freight and shipping when control over vehicles, parts or accessories have transferred to the customer as an expense in cost of automotive sales revenue. Our policy is to exclude taxes collected from a customer from the transaction price of automotive contracts.

Automotive Sales with Resale Value Guarantee or a Buyback Option

We offer resale value guarantees or similar buy-back terms to certain international customers who purchase vehicles and who finance their vehicles through one of our specified commercial banking partners. We also offer resale value guarantees in connection with automotive sales to certain leasing partners. Under these programs, we receive full payment for the vehicle sales price at the time of delivery and our counterparty has the option of selling their vehicle back to us during the guarantee period, which currently is generally at the end of the term of the applicable loan or financing program, for a pre-determined resale value.

We recognize revenue when control transfers upon delivery to customers in accordance with ASC 606 as a sale with a right of return when we do not believe the customer has a significant economic incentive to exercise the resale value guarantee provided to them at contract inception. The process to determine whether there is a significant economic incentive includes a comparison of a vehicle's estimated market value at the time the option is exercisable with the guaranteed resale value to determine the customer's economic incentive to exercise. The performance obligations and the pattern of recognizing automotive sales with resale value guarantees are consistent with automotive sales without resale value guarantees with the exception of our estimate for sales return reserve. Sales return reserves for automotive sales with resale value guarantees are estimated based on historical experience plus consideration for expected future market values. On a quarterly basis, we assess the estimated market values of vehicles sold with resale value guarantees to determine whether there have been changes to the likelihood of future product returns. As we accumulate more data related to the resale values of our vehicles or as market conditions change, there may be material changes to their estimated values.

Inventory Valuation

Inventories are stated at the lower of cost or net realizable value. Cost is computed using standard cost for vehicles and energy storage products, which approximates actual cost on a first-in, first-out basis. In addition, cost for solar energy systems is recorded using actual cost. We record inventory write-downs for excess or obsolete inventories based upon assumptions about current and future demand forecasts. If our inventory on-hand is in excess of our future demand forecast, the excess amounts are written-off.

We also review our inventory to determine whether its carrying value exceeds the net amount realizable upon the ultimate sale of the inventory. This requires us to determine the estimated selling price of our vehicles less the estimated cost to convert the inventory on-hand into a finished product. Once inventory is written-down, a new, lower cost basis for that inventory is established and subsequent changes in facts and circumstances do not result in the restoration or increase in that newly established cost basis.

Should our estimates of future selling prices or production costs change, additional and potentially material write-downs may be required. A small change in our estimates may result in a material charge to our reported financial results.

Warranties

We provide a manufacturer's warranty on all new and used vehicles and a warranty on the installation and components of the energy generation and storage systems we sell for periods typically between 10 to 25 years. We accrue a warranty reserve for the products sold by us, which includes our best estimate of the projected costs to repair or replace items under warranties and recalls if identified. These estimates are based on actual claims incurred to date and an estimate of the nature, frequency and costs of future claims. These estimates are inherently uncertain given our relatively short history of sales, and changes to our historical or projected warranty experience may cause material changes to the warranty reserve in the future. The warranty reserve does not include projected warranty costs associated with our vehicles subject to operating lease accounting and our solar energy systems under lease contracts or PPAs, as the costs to repair these warranty claims are expensed as incurred. The portion of the warranty reserve expected to be incurred within the next 12 months is included within Accrued liabilities and other, while the remaining balance is included within Other long-term liabilities on the consolidated balance sheets. Warranty expense is recorded as a component of Cost of revenues in the consolidated statements of operations. Due to the magnitude of our automotive business, accrued warranty balance is primarily related to our automotive segment.

Stock-Based Compensation

We use the fair value method of accounting for our stock options and restricted stock units ("RSUs") granted to employees and for our employee stock purchase plan (the "ESPP") to measure the cost of employee services received in exchange for the stock-based awards. The fair value of stock option awards with only service and/or performance conditions is estimated on the grant or offering date using the Black-Scholes option-pricing model. The Black-Scholes option-pricing model requires inputs such as the risk-free interest rate, expected term and expected volatility. These inputs are subjective and generally require significant judgment. The fair value of RSUs is measured on the grant date based on the closing fair market value of our common stock. The resulting cost is recognized over the period during which an employee is required to provide service in exchange for the awards, usually the vesting period, which is generally four years for stock options and RSUs and six months for the ESPP. Stock-based compensation expense is recognized on a straight-line basis, net of actual forfeitures in the period.

For performance-based awards, stock-based compensation expense is recognized over the expected performance achievement period of individual performance milestones when the achievement of each individual performance milestone becomes probable. For performance-based awards with a vesting schedule based entirely on the attainment of both performance and market conditions, stock-based compensation expense associated with each tranche is recognized over the longer of (i) the expected achievement period for the operational milestone for such tranche and (ii) the expected achievement period for the related market capitalization milestone determined on the grant date, beginning at the point in time when the relevant operational milestone is considered probable of being achieved. If such operational milestone becomes probable any time after the grant date, we will recognize a cumulative catch-up expense from the grant date to that point in time. If the related market capitalization milestone is achieved earlier than its expected achievement period and the achievement of the related operational milestone, then the stock-based compensation expense will be recognized over the expected achievement period for the operational milestone, which may accelerate the rate at which such expense is recognized. The fair value of such awards is estimated on the grant date using Monte Carlo simulations.

As we accumulate additional employee stock-based awards data over time and as we incorporate market data related to our common stock, we may calculate significantly different volatilities and expected lives, which could materially impact the valuation of our stock-based awards and the stock-based compensation expense that we will recognize in future periods. Stock-based compensation expense is recorded in Cost of revenues, Research and development expense and Selling, general and administrative expense in the consolidated statements of operations.

Income Taxes

We are subject to taxes in the U.S. and in many foreign jurisdictions. Significant judgment is required in determining our provision for income taxes, our deferred tax assets and liabilities and any valuation allowance recorded against our net deferred tax assets. We make these estimates and judgments about our future taxable income that are based on assumptions that are consistent with our future plans. Tax laws, regulations and administrative practices may be subject to change due to economic or political conditions including fundamental changes to the tax laws applicable to corporate multinationals. The U.S., many countries in the European Union and a number of other countries are actively considering changes in this regard. As of December 31, 2021, we had recorded a full valuation allowance on our net U.S. deferred tax assets because we expect that it is more likely than not that our U.S. deferred tax assets will not be realized. Should the actual amounts differ from our estimates, the amount of our valuation allowance could be materially impacted.

Furthermore, significant judgment is required in evaluating our tax positions. In the ordinary course of business, there are many transactions and calculations for which the ultimate tax settlement is uncertain. As a result, we recognize the effect of this uncertainty on our tax attributes or taxes payable based on our estimates of the eventual outcome. These effects are recognized when, despite our belief that our tax return positions are supportable, we believe that it is more likely than not that some of those positions may not be fully sustained upon review by tax authorities. We are required to file income tax returns in the U.S. and various foreign jurisdictions, which requires us to interpret the applicable tax laws and regulations in effect in such jurisdictions. Such returns are subject to audit by the various federal, state and foreign taxing authorities, who may disagree with respect to our tax positions. We believe that our consideration is adequate for all open audit years based on our assessment of many factors, including past experience and interpretations of tax law. We review and update our estimates in light of changing facts and circumstances, such as the closing of a tax audit, the lapse of a statute of limitations or a change in estimate. To the extent that the final tax outcome of these matters differs from our expectations, such differences may impact income tax expense in the period in which such determination is made. The eventual impact on our income tax expense depends in part if we still have a valuation allowance recorded against our deferred tax assets in the period that such determination is made.

Results of Operations

Revenues

(Dollars in millions)	Year Ended December 31, 2021	2020	2019	2021 vs. 2020 Change $	2021 vs. 2020 Change %	2020 vs. 2019 Change $	2020 vs. 2019 Change %
Automotive sales	$ 44,125	$ 24,604	$ 19,358	$ 19,521	79%	$ 5,246	27%
Automotive regulatory credits	1,465	1,580	594	(115)	-7%	986	166%
Automotive leasing	1,642	1,052	869	590	56%	183	21%
Total automotive revenues	47,232	27,236	20,821	19,996	73%	6,415	31%
Services and other	3,802	2,306	2,226	1,496	65%	80	4%
Total automotive & services and other segment revenue	51,034	29,542	23,047	21,492	73%	6,495	28%
Energy generation and storage segment revenue	2,789	1,994	1,531	795	40%	463	30%
Total revenues	$ 53,823	$ 31,536	$ 24,578	$ 22,287	71%	$ 6,958	28%

Automotive & Services and Other Segment

Automotive sales revenue includes revenues related to cash deliveries of new Model S, Model X, Model 3 and Model Y vehicles, including access to our Supercharger network, internet connectivity, FSD features and over-the-air software updates. Cash deliveries are vehicles that are not subject to lease accounting.

Automotive regulatory credits includes sales of regulatory credits to other automotive manufacturers. Our revenue from automotive regulatory credits is directly related to our new vehicle production, sales and pricing negotiated with our customers. We monetize them proactively as new vehicles are sold based on standing arrangements with buyers of such credits, typically as close as possible to the production and delivery of the vehicle or changes in regulation impacting the credits.

Automotive leasing revenue includes the amortization of revenue for vehicles under direct operating lease agreements as well as those sold with resale value guarantees accounted for as operating leases under lease accounting. Additionally, automotive leasing revenue includes direct sales-type leasing programs where we recognize all revenue associated with the sales-type lease upon delivery to the customer.

Services and other revenue consists of non-warranty after-sales vehicle services, sales of used vehicles, retail merchandise, sales by our acquired subsidiaries to third party customers and vehicle insurance revenue.

2021 compared to 2020

Automotive sales revenue increased $19.52 billion, or 79%, in the year ended December 31, 2021 as compared to the year ended December 31, 2020, primarily due to an increase of 433,815 Model 3 and Model Y cash deliveries year over year from production ramping at both Gigafactory Shanghai and the Fremont Factory at a slightly higher combined average selling price from a higher proportion of Model Y sales offset by regional sales mix. Additionally, we had a $365 million net release of our sales return reserve on vehicles sold with resale value guarantees, which increased our automotive sales revenue, due to actual return rates being lower than expected and increases in resale values of our vehicles in 2021. The increases in automotive sales revenue were partially offset by a decrease of 28,819 Model S and Model X cash deliveries at a higher combined average selling price as deliveries of the new versions of Model S and Model X only began ramping in the second and fourth quarters of 2021, respectively.

Automotive regulatory credits revenue decreased $115 million, or 7%, in the year ended December 31, 2021 as compared to the year ended December 31, 2020, primarily due to changes in regulation which entitled us to additional credits in the prior year and changes in pricing in certain regions.

Automotive leasing revenue increased $590 million, or 56%, in the year ended December 31, 2021 as compared to the year ended December 31, 2020, primarily due to an increase in cumulative vehicles under our direct operating lease program and an increase in direct sales-type leasing revenue as we have a full year of sales in 2021 since we began offering the program during the third quarter of 2020. These increases were partially offset by the decrease in automotive leasing revenue associated with our resale value

guarantee leasing programs accounted for as operating leases as those portfolios have declined.

Services and other revenue increased $1.50 billion, or 65%, in the year ended December 31, 2021 as compared to the year ended December 31, 2020, primarily due to an increase in used vehicle revenue driven by increases in volume and average selling prices of used vehicles, non-warranty maintenance services revenue as our fleet continues to grow and retail merchandise revenue.

Energy Generation and Storage Segment

Energy generation and storage revenue includes sales and leasing of solar energy generation and energy storage products, services related to such products and sales of solar energy systems incentives.

2021 compared to 2020

Energy generation and storage revenue increased by $795 million, or 40%, in the year ended December 31, 2021 as compared to the year ended December 31, 2020, primarily due to an increase in deployments of Megapack, solar cash and loan jobs, Powerwall and Solar Roof, partially offset by a decrease in Powerpack deployments as we phase out the product following the introduction of Megapack.

Cost of Revenues and Gross Margin

	Year Ended December 31,			2021 vs. 2020 Change		2020 vs. 2019 Change	
(Dollars in millions)	2021	2020	2019	$	%	$	%
Cost of revenues							
Automotive sales	$ 32,415	$ 19,696	$ 15,939	$ 12,719	65 %	$ 3,757	24 %
Automotive leasing	978	563	459	415	74 %	104	23 %
Total automotive cost of revenues	33,393	20,259	16,398	13,134	65 %	3,861	24 %
Services and other	3,906	2,671	2,770	1,235	46 %	(99)	-4 %
Total automotive & services and other segment cost of revenues	37,299	22,930	19,168	14,369	63 %	3,762	20 %
Energy generation and storage segment	2,918	1,976	1,341	942	48 %	635	47 %
Total cost of revenues	$ 40,217	$ 24,906	$ 20,509	$ 15,311	61 %	$ 4,397	21 %
Gross profit total automotive	$ 13,839	$ 6,977	$ 4,423				
Gross margin total automotive	29.3 %	25.6 %	21.2 %				
Gross profit total automotive & services and other segment	$ 13,735	$ 6,612	$ 3,879				
Gross margin total automotive & services and other segment	26.9 %	22.4 %	16.8 %				
Gross profit energy generation and storage segment	$ (129)	$ 18	$ 190				
Gross margin energy generation and storage segment	-4.6 %	0.9 %	12.4 %				
Total gross profit	$ 13,606	$ 6,630	$ 4,069				
Total gross margin	25.3 %	21.0 %	16.6 %				

Automotive & Services and Other Segment

Cost of automotive sales revenue includes direct and indirect materials, labor costs, manufacturing overhead, including depreciation costs of tooling and machinery, shipping and logistic costs, vehicle connectivity costs, allocations of electricity and infrastructure costs related to our Supercharger network and reserves for estimated warranty expenses. Cost of automotive sales revenues also includes adjustments to warranty expense and charges to write down the carrying value of our inventory when it exceeds its estimated net realizable value and to provide for obsolete and on-hand inventory in excess of forecasted demand.

Cost of automotive leasing revenue includes the depreciation of operating lease vehicles, cost of goods sold associated with direct sales-type leases and warranty expense related to leased vehicles. Cost of automotive leasing revenue also includes vehicle connectivity costs and allocations of electricity and infrastructure costs related to our Supercharger network for vehicles under our leasing programs.

Cost of services and other revenue includes costs associated with providing non-warranty after-sales services, cost of used vehicles including refurbishment costs, costs for retail merchandise, and costs to provide vehicle insurance. Cost of services and other revenue also includes direct parts, material and labor costs and manufacturing overhead associated with the sales by our acquired subsidiaries to third party customers.

2021 compared to 2020

Cost of automotive sales revenue increased $12.72 billion, or 65%, in the year ended December 31, 2021 as compared to the year ended December 31, 2020, primarily due to an increase of 433,815 Model 3 and Model Y cash deliveries. Additionally, the net release of our sales return reserve on vehicles sold with resale value guarantees resulted in a corresponding increase of $286 million in cost of automotive sales revenue. These increases were partially offset by a decrease of 28,819 Model S and Model X cash deliveries at higher costs per unit due to temporary under-utilization of manufacturing capacity at lower production volumes during our current production ramp of the new versions of Model S and Model X. Additionally, there was a decrease in combined average Model 3 and Model Y costs per unit due to changes in regional production mix as Gigafactory Shanghai has ramped in capacity, where costs are lower from localized procurement and manufacturing in China.

Cost of automotive leasing revenue increased $415 million, or 74%, in the year ended December 31, 2021 as compared to the year ended December 31, 2020, primarily due to an increase in cumulative vehicles under our direct operating lease program and an increase in direct sales-type leasing cost of revenues from more sales in the current year. These increases were partially offset by the decrease in cost of automotive leasing revenue associated with our resale value guarantee leasing programs accounted for as operating leases as those portfolios have declined.

Cost of services and other revenue increased $1.24 billion, or 46%, in the year ended December 31, 2021 as compared to the year ended December 31, 2020, primarily due to an increase in used vehicle cost of revenue driven by increases in volume and costs of non-Tesla used vehicles, costs to support our increase in non-warranty maintenance services revenue and costs of retail merchandise as our sales have increased.

Gross margin for total automotive increased from 25.6% in the year ended December 31, 2020 to 29.3% in the year ended December 31, 2021. The increase was primarily due to favorable changes in sales and production mix of Model 3 and Model Y as Gigafactory Shanghai has ramped in capacity. The average Model 3 and Model Y costs per unit have decreased significantly due to localized procurement and manufacturing in China despite rising raw material, commodity, logistics and expedite costs. Additionally, our Model Y gross margin has benefitted from shared manufacturing of Model 3 and learnings from the scaling of past products. These increases were partially offset by a decrease of $115 million in sales of regulatory credits, which have negligible incremental costs associated with them.

Gross margin for total automotive & services and other segment increased from 22.4% in the year ended December 31, 2020 to 26.9% in the year ended December 31, 2021, primarily due to the automotive gross margin impacts discussed above and an improvement in our services and other gross margin. Additionally, there was a lower proportion of services and other, which operated at a lower gross margin than our automotive business, within the segment in the year ended December 31, 2021 compared to the prior year.

Energy Generation and Storage Segment

Cost of energy generation and storage revenue includes direct and indirect material and labor costs, warehouse rent, freight, warranty expense, other overhead costs and amortization of certain acquired intangible assets. Cost of energy generation and storage revenue also includes charges to write down the carrying value of our inventory when it exceeds its estimated net realizable value and to provide for obsolete and on-hand inventory in excess of forecasted demand. In agreements for solar energy system and PPAs where we are the lessor, the cost of revenue is primarily comprised of depreciation of the cost of leased solar energy systems, maintenance costs associated with those systems and amortization of any initial direct costs.

2021 compared to 2020

Cost of energy generation and storage revenue increased by $942 million, or 48%, in the year ended December 31, 2021 as compared to the year ended December 31, 2020, primarily due to increases in deployments of Solar Roof, solar cash and loan jobs, Megapack and Powerwall, partially offset by reductions in average costs per unit of Solar Roof as deployments have increased and a decrease in Powerpack deployments as we phase out the product following the introduction of Megapack.

Gross margin for energy generation and storage decreased from 0.9% in the year ended December 31, 2020 to -4.6% in the year ended December 31, 2021, primarily due to a higher proportion of Solar Roof in our overall energy business which operated at a lower gross margin as a result of temporary manufacturing underutilization during product ramp despite an improvement in gross margin compared to the prior year and lower Powerpack gross margin as fixed cost absorptions are negatively impacted as we phase out the product following the introduction of Megapack. These decreases were partially offset by a higher proportion of Powerwall in our overall energy business which operated at a higher gross margin as well as an increase in Megapack gross margin as we continue to scale the products.

Research and Development Expense

	Year Ended December 31,			2021 vs. 2020 Change		2020 vs. 2019 Change	
(Dollars in millions)	2021	2020	2019	$	%	$	%
Research and development	$ 2,593	$ 1,491	$ 1,343	$ 1,102	74 %	$ 148	11 %
As a percentage of revenues	5 %	5 %	5 %				

Research and development ("R&D") expenses consist primarily of personnel costs for our teams in engineering and research, manufacturing engineering and manufacturing test organizations, prototyping expense, contract and professional services and amortized equipment expense.

R&D expenses increased $1.10 billion, or 74%, in the year ended December 31, 2021 as compared to the year ended December 31, 2020. The increase was primarily due to a $506 million increase in employee and labor related expenses due to an increase in headcount, a $263 million increase in R&D expensed materials, a $211 million increase in facilities, outside services, freight and depreciation expense and an $103 million increase in stock-based compensation expense. These increases were to support our expanding product roadmap such as the new versions of Model S and Model X and technologies including our proprietary battery cells and there were additional R&D expenses as we were in the pre-production phases at both Gigafactory Texas and Gigafactory Berlin in the current year.

R&D expenses as a percentage of revenue remained consistent at 5% in the year ended December 31, 2021 as compared to the year ended December 31, 2020. R&D expenses increased proportionately with the increase in total revenues from expanding sales.

Selling, General and Administrative Expense

	Year Ended December 31,			2021 vs. 2020 Change		2020 vs. 2019 Change	
(Dollars in millions)	2021	2020	2019	$	%	$	%
Selling, general and administrative	$ 4,517	$ 3,145	$ 2,646	$ 1,372	44 %	$ 499	19 %
As a percentage of revenues	8 %	10 %	11 %				

Selling, general and administrative ("SG&A") expenses generally consist of personnel and facilities costs related to our stores, marketing, sales, executive, finance, human resources, information technology and legal organizations, as well as fees for professional and contract services and litigation settlements.

SG&A expenses increased $1.37 billion, or 44%, in the year ended December 31, 2021 as compared to the year ended December 31, 2020. The increase is primarily due to an increase of $568 million in employee and labor related expenses from increased headcount and increased payroll taxes due to our higher average share price in the year ended December 31, 2021 compared to the prior year. Additionally, there was $340 million of additional payroll tax due to our CEO's option exercises from the 2012 CEO Performance Award, a $319 million increase in office, information technology, facilities-related expenses, sales and marketing activities and other costs and an increase of $145 million in stock-based compensation expense, of which $72 million was attributable to the 2018 CEO Performance Award. See *Note 13, Equity Incentive Plans*, to the consolidated financial statements included elsewhere in this Annual Report on Form 10-K.

SG&A expenses as a percentage of revenue decreased from 10% in the year ended December 31, 2020 to 8% in the year ended December 31, 2021. Our SG&A expenses have decreased as a proportion of total revenues due to operational efficiencies.

Restructuring and Other Expense

	Year Ended December 31,			2021 vs. 2020 Change		2020 vs. 2019 Change	
(Dollars in millions)	2021	2020	2019	$	%	$	%
Restructuring and other	$ (27)	$ —	$ 149	$ (27)	Not meaningful	$ (149)	-100 %
As a percentage of revenues	0 %	0 %	1 %				

During the year ended December 31, 2021, we recorded $101 million of impairment losses on bitcoin. We also realized gains of $128 million in connection with selling a portion of our holdings in March 2021. See Note 2, *Summary of Significant Accounting Policies*, and Note 3, *Digital Assets, Net*, to the consolidated financial statements included elsewhere in this Annual Report on Form 10-K for further details.

Interest Expense

	Year Ended December 31,			2021 vs. 2020 Change		2020 vs. 2019 Change	
(Dollars in millions)	2021	2020	2019	$	%	$	%
Interest expense	$ (371)	$ (748)	$ (685)	$ 377	-50 %	$ (63)	9 %

As a percentage of revenues	1 %	2 %	3 %

Interest expense decreased by $377 million, or 50%, in the year ended December 31, 2021 as compared to the year ended December 31, 2020, primarily due to a reduction of $173 million as a result of the adoption of ASU 2020-06, Accounting for Convertible Instruments and Contracts in an Entity's Own Equity, on January 1, 2021, whereby we have de-recognized the remaining debt discounts on the 2022 Notes and 2024 Notes and therefore no longer recognize any amortization of debt discounts as interest expense, as well as the continued reduction in our overall debt balance. See Note 2, *Summary of Significant Accounting Policies*, to the consolidated financial statements included elsewhere in this Annual Report on Form 10-K for further details.

Other Income (Expense), Net

(Dollars in millions)	Year Ended December 31, 2021	2020	2019	2021 vs. 2020 Change $	2021 vs. 2020 Change %	2020 vs. 2019 Change $	2020 vs. 2019 Change %
Other income (expense), net	$ 135	$ (122)	$ 45	$ 257	Not meaningful	$ (167)	Not meaningful
As a percentage of revenues	0%	0%	0%				

Other income (expense), net, consists primarily of foreign exchange gains and losses related to our foreign currency-denominated monetary assets and liabilities and changes in the fair values of our fixed-for-floating interest rate swaps. We expect our foreign exchange gains and losses will vary depending upon movements in the underlying exchange rates.

Other income (expense), net, changed favorably by $257 million in the year ended December 31, 2021 as compared to the year ended December 31, 2020, primarily due to favorable fluctuations in foreign currency exchange rates and a $49 million favorable change in the mark-to-market remeasurement of our interest rate swaps.

Provision for Income Taxes

(Dollars in millions)	Year Ended December 31, 2021	2020	2019	2021 vs. 2020 Change $	2021 vs. 2020 Change %	2020 vs. 2019 Change $	2020 vs. 2019 Change %
Provision for income taxes	$ 699	$ 292	$ 110	$ 407	139%	$ 182	165%
Effective tax rate	11%	25%	-17%				

Our provision for income taxes increased by $407 million, or 139%, in the year ended December 31, 2021 as compared to the year ended December 31, 2020, primarily due to the increases in taxable profits within our foreign jurisdictions year over year.

Our effective tax rate decreased from 25% to 11% in the year ended December 31, 2021 as compared to the year ended December 31, 2020, primarily due to growth in pre-tax income and changes in mix of jurisdictional earnings.

See Note 14, *Income Taxes*, to the consolidated financial statements included elsewhere in this Annual Report on Form 10-K for further details.

Net Income Attributable to Noncontrolling Interests and Redeemable Noncontrolling Interests

(Dollars in millions)	Year Ended December 31, 2021	2020	2019	2021 vs. 2020 Change $	2021 vs. 2020 Change %	2020 vs. 2019 Change $	2020 vs. 2019 Change %
Net income attributable to noncontrolling interests and redeemable noncontrolling interests in subsidiaries	$ 125	$ 141	$ 87	$ (16)	-11%	$ 54	62%

Net income attributable to noncontrolling interests and redeemable noncontrolling interests decreased by $16 million, or 11%, in the year ended December 31, 2021 as compared to the year ended December 31, 2020.

Liquidity and Capital Resources

We expect to continue to generate net positive operating cash flow as we have done in the last four fiscal years. The cash we generate from our core operations enables us to fund ongoing operations and production, our research and development projects for new products and technologies including our proprietary battery cells, additional manufacturing ramps at existing manufacturing facilities such as the Fremont Factory, Gigafactory Nevada, Gigafactory Shanghai and Gigafactory New York, the construction and ramp of Gigafactory Berlin and Gigafactory Texas and the continued expansion of our retail and service locations, body shops, Mobile Service fleet, Supercharger network

and energy product installation capabilities.

In addition, because a large portion of our future expenditures will be to fund our growth, we expect that if needed we will be able to adjust our capital and operating expenditures by operating segment. For example, if our near-term manufacturing operations decrease in scale or ramp more slowly than expected, including due to global economic or business conditions, we may choose to correspondingly slow the pace of our capital expenditures. Finally, we continually evaluate our cash needs and may decide it is best to raise additional capital or seek alternative financing sources to fund the rapid growth of our business, including through drawdowns on existing or new debt facilities or financing funds. Conversely, we may also from time to time determine that it is in our best interests to voluntarily repay certain indebtedness early.

Accordingly, we believe that our current sources of funds will provide us with adequate liquidity during the 12-month period following December 31, 2021, as well as in the long-term.

See the sections below for more details regarding the material requirements for cash in our business and our sources of liquidity to meet such needs.

Material Cash Requirements

From time to time in the ordinary course of business, we enter into agreements with vendors for the purchase of components and raw materials to be used in the manufacture of our products. However, due to contractual terms, variability in the precise growth curves of our development and production ramps, and opportunities to renegotiate pricing, we generally do not have binding and enforceable purchase orders under such contracts beyond the short term, and the timing and magnitude of purchase orders beyond such period is difficult to accurately project.

As discussed in and subject to the considerations referenced in Part II, Item 7, *Management's Discussion and Analysis of Financial Condition and Results of Operations —Management Opportunities, Challenges and Risks and 2022 Outlook—Cash Flow and Capital Expenditure Trends* in this Annual Report on Form 10-K, we currently expect our capital expenditures to support our projects globally to be between $5.00 to $7.00 billion in 2022 and each of the next two fiscal years. In connection with our operations at Gigafactory New York, we have an agreement to spend or incur $5.00 billion in combined capital, operational expenses, costs of goods sold and other costs in the State of New York through December 31, 2029 (pursuant to a deferral of our required timelines to meet such obligations that was granted in April 2021 and which was memorialized in an amendment to our agreement with the SUNY Foundation in August 2021). We also have an operating lease arrangement with the local government of Shanghai pursuant to which we are required to spend RMB 14.08 billion in capital expenditures at Gigafactory Shanghai by the end of 2023. For details regarding these obligations, refer to *Note 15, Commitments and Contingencies*, to the consolidated financial statements included elsewhere in this Annual Report on Form 10-K.

As of December 31, 2021, we and our subsidiaries had outstanding $5.38 billion in aggregate principal amount of indebtedness, of which $1.09 billion is scheduled to become due in the succeeding 12 months. As of December 31, 2021, our total minimum lease payments are $4.03 billion, of which $1.04 billion is due in the succeeding 12 months. For details regarding our indebtedness and lease obligations, refer to *Note 11, Debt*, and *Note 12, Leases,* to the consolidated financial statements included elsewhere in this Annual Report on Form 10-K.

Sources and Conditions of Liquidity

Our sources to fund our material cash requirements are predominantly from our deliveries and servicing of new and used vehicles, sales and installations of our energy storage products and solar energy systems, proceeds from debt facilities and proceeds from equity offerings, when applicable.

As of December 31, 2021, we had $17.58 billion of cash and cash equivalents. Balances held in foreign currencies had a U.S. dollar equivalent of $7.22 billion and consisted primarily of Chinese yuan, euros and Canadian dollars. In addition, we had $1.11 billion of unused committed amounts under our credit facilities as of December 31, 2021. Certain of such unused committed amounts are subject to satisfying specified conditions prior to draw-down (such as pledging to our lenders sufficient amounts of qualified receivables, inventories, leased vehicles and our interests in those leases, solar energy systems and the associated customer contracts or various other assets). For details regarding our indebtedness, refer to *Note 11, Debt* to the consolidated financial statements included elsewhere in this Annual Report on Form 10-K.

We continue adapting our investment strategy to meet our liquidity and risk objectives, such as investing in U.S. government and other marketable securities, digital assets and providing product related financing. In the first quarter of 2021, we invested an aggregate $1.50 billion in bitcoin. The fair market value of our bitcoin holdings as of December 31, 2021 was $1.99 billion. We believe in the long-term potential of digital assets both as an investment and also as a liquid alternative to cash. As with any investment and consistent with how we manage fiat-based cash and cash equivalent accounts, we may increase or decrease our holdings of digital assets at any time based on the needs of the business and our view of market and environmental conditions. However, digital assets may be subject to volatile market prices, which may be unfavorable at the times when we may want or need to liquidate them. Additionally, we held short-term marketable securities of $131 million as of December 31, 2021.

Summary of Cash Flows

(Dollars in millions)	Year Ended December 31, 2021	2020	2019
Net cash provided by operating activities	$ 11,497	$ 5,943	$ 2,405
Net cash used in investing activities	$ (7,868)	$ (3,132)	$ (1,436)
Net cash (used in) provided by financing activities	$ (5,203)	$ 9,973	$ 1,529

Cash Flows from Operating Activities

Our cash flows from operating activities are significantly affected by our cash investments to support the growth of our business in areas such as research and development and selling, general and administrative and working capital. Our operating cash inflows include cash from vehicle sales and related servicing, customer lease payments, customer deposits, cash from sales of regulatory credits and energy generation and storage products. These cash inflows are offset by our payments to suppliers for production materials and parts used in our manufacturing process, operating expenses, operating lease payments and interest payments on our financings.

Net cash provided by operating activities increased by $5.55 billion to $11.50 billion during the year ended December 31, 2021 from $5.94 billion during the year ended December 31, 2020. This increase was primarily due to the increase in net income excluding non-cash expenses and gains of $5.22 billion and the overall decrease in net operating assets and liabilities of $334 million. The decrease in our net operating assets and liabilities was mainly driven by a larger increase of accounts payable and accrued liabilities in the year ended December 31, 2021 as compared to the prior year from ramp up in production at Gigafactory Shanghai and the Fremont Factory. The decrease in our net operating assets and liabilities was partially offset by larger increases of inventory and operating lease vehicles compared to the prior year.

Cash Flows from Investing Activities

Cash flows from investing activities and their variability across each period related primarily to capital expenditures, which were $6.48 billion for the year ended December 31, 2021 and $3.16 billion for the year ended December 31, 2020, mainly for the construction of Gigafactory Texas and Gigafactory Berlin and the expansions of Gigafactory Shanghai and the Fremont Factory. Additionally, net cash outflows related to digital assets were $1.23 billion in the year ended December 31, 2021 from purchases of digital assets for $1.50 billion offset by proceeds from sales of digital assets of $272 million.

Cash Flows from Financing Activities

Cash outflows from financing activities were $5.20 billion during the year ended December 31, 2021 compared to $9.97 billion net cash provided by financing activities during the year ended December 31, 2020. The change was primarily due to no equity offerings in 2021 compared to $12.27 billion of proceeds from issuances of common stock net of issuance costs in 2020, a $3.37 billion increase in net repayments of convertible and other debt compared to the prior year, offset by an increase in proceeds from exercise of stock options and other stock issuances of $290 million and a decrease in collateralized lease repayments of $231 million compared to the prior year. See *Note 11, Debt*, to the consolidated financial statements included elsewhere in this Annual Report on Form 10-K for further details regarding our debt obligations.

Recent Accounting Pronouncements

See Note 2, *Summary of Significant Accounting Policies*, to the consolidated financial statements included elsewhere in this Annual Report on Form 10-K.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Foreign Currency Risk

We transact business globally in multiple currencies and hence have foreign currency risks related to our revenue, costs of revenue, operating expenses and localized subsidiary debt denominated in currencies other than the U.S. dollar (primarily the Chinese yuan, euro, Canadian dollar and Norwegian krone in relation to our current year operations). In general, we are a net receiver of currencies other than the U.S. dollar for our foreign subsidiaries. Accordingly, changes in exchange rates affect our revenue and

other operating results as expressed in U.S. dollars as we do not typically hedge foreign currency risk.

We have also experienced, and will continue to experience, fluctuations in our net income as a result of gains (losses) on the settlement and the re-measurement of monetary assets and liabilities denominated in currencies that are not the local currency (primarily consisting of our intercompany and cash and cash equivalents balances).

We considered the historical trends in foreign currency exchange rates and determined that it is reasonably possible that adverse changes in foreign currency exchange rates of 10% for all currencies could be experienced in the near-term. These changes were applied to our total monetary assets and liabilities denominated in currencies other than our local currencies at the balance sheet date to compute the impact these changes would have had on our net income before income taxes. These changes would have resulted in a gain or loss of $277 million at December 31, 2021 and $8 million at December 31, 2020 assuming no foreign currency hedging.

Interest Rate Risk

We are exposed to interest rate risk on our borrowings that bear interest at floating rates. Pursuant to our risk management policies, in certain cases, we utilize derivative instruments to manage some of this risk. We do not enter into derivative instruments for trading or speculative purposes. A hypothetical 10% change in interest rates on our floating rate debt would have increased or decreased our interest expense for the years ended December 31, 2021 and 2020 by $2 million and $4 million, respectively.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

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Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of Tesla, Inc.

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Tesla, Inc. and its subsidiaries (the "Company") as of December 31, 2021 and 2020, and the related consolidated statements of operations, of comprehensive income (loss), of redeemable noncontrolling interests and equity and of cash flows for each of the three years in the period ended December 31, 2021, including the related notes (collectively referred to as the "consolidated financial statements"). We also have audited 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 (COSO).

In our opinion, the consolidated financial statements referred to above 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 three years in the period ended December 31, 2021 in conformity with accounting principles generally accepted in the United States of America. Also 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 the COSO.

Changes in Accounting Principles

As discussed in Note 2 to the consolidated financial statements, the Company changed the manner in which it accounts for convertible debt in 2021 and the manner in which it accounts for leases in 2019.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in Management's Report on Internal Control over Financial Reporting appearing under Item 9A. Our responsibility is to express opinions on the Company's consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

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

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 (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) 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 (iii) 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.

Critical Audit Matters

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

Automotive Warranty Reserve

As described in Note 2 to the consolidated financial statements, total accrued warranty, which primarily relates to the automotive segment, was $2,101 million as of December 31, 2021. The Company provides a manufacturer's warranty on all new and used Tesla vehicles. A warranty reserve is accrued for these products sold, which includes management's best estimate of the projected costs to repair or replace items under warranty, including recalls if identified. These estimates are based on actual claims incurred to date and an estimate of the nature, frequency and costs of future claims.

The principal considerations for our determination that performing procedures relating to the automotive warranty reserve is a critical audit matter are the significant judgment by management in determining the automotive warranty reserve; this in turn led to significant auditor judgment, subjectivity, and effort in performing procedures to evaluate the estimate of the nature, frequency and costs of future claims, and the audit effort involved the use of professionals with specialized skill and knowledge.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to management's estimate of the automotive warranty reserve, including controls over management's estimate of the nature, frequency and costs of future claims as well as the completeness and accuracy of actual claims incurred to date. These procedures also included, among others, testing management's process for determining the automotive warranty reserve. This included evaluating the appropriateness of the model applied and the reasonableness of significant assumptions related to the nature and frequency of future claims and the related costs to repair or replace items under warranty. Evaluating the assumptions related to the nature and frequency of future claims and the related costs to repair or replace items under warranty involved evaluating whether the assumptions used were reasonable considering current and past performance, including a lookback analysis comparing prior period forecasted claims to actual claims incurred. These procedures also included developing an independent estimate of a portion of the automotive warranty reserve and comparing the independent estimate to management's estimate to evaluate the reasonableness of the estimate, and testing the completeness and accuracy of historical vehicle claims processed and that such claims were appropriately used by management in the estimation of future claims. Professionals with specialized skill and knowledge were used to assist in developing an independent estimate of a portion of the automotive warranty reserve and in evaluating the appropriateness of certain aspects of management's model for estimating the nature and frequency of future claims.

/s/ PricewaterhouseCoopers LLP

San Jose, California
February 4, 2022

We have served as the Company's auditor since 2005.

Tesla, Inc.

Consolidated Balance Sheets
(in millions, except per share data)

	December 31, 2021	December 31, 2020
Assets		
Current assets		
Cash and cash equivalents	$ 17,576	$ 19,384
Short-term marketable securities	131	—
Accounts receivable, net	1,913	1,886
Inventory	5,757	4,101
Prepaid expenses and other current assets	1,723	1,346
Total current assets	27,100	26,717
Operating lease vehicles, net	4,511	3,091
Solar energy systems, net	5,765	5,979
Property, plant and equipment, net	18,884	12,747
Operating lease right-of-use assets	2,016	1,558
Digital assets, net	1,260	—
Intangible assets, net	257	313
Goodwill	200	207
Other non-current assets	2,138	1,536
Total assets	$ 62,131	$ 52,148
Liabilities		
Current liabilities		
Accounts payable	$ 10,025	$ 6,051
Accrued liabilities and other	5,719	3,855
Deferred revenue	1,447	1,458
Customer deposits	925	752
Current portion of debt and finance leases	1,589	2,132
Total current liabilities	19,705	14,248
Debt and finance leases, net of current portion	5,245	9,556
Deferred revenue, net of current portion	2,052	1,284
Other long-term liabilities	3,546	3,330
Total liabilities	30,548	28,418
Commitments and contingencies (Note 15)		
Redeemable noncontrolling interests in subsidiaries	568	604
Convertible senior notes (Note 11)	—	51
Equity		
Stockholders' equity		
Preferred stock; $0.001 par value; 100 shares authorized; no shares issued and outstanding	—	—

Common stock; $0.001 par value; 2,000 shares authorized; 1,033 and 960 shares issued and outstanding as of December 31, 2021 and December 31, 2020, respectively	1	1
Additional paid-in capital	29,803	27,260
Accumulated other comprehensive income	54	363
Retained earnings (accumulated deficit)	331	(5,399)
Total stockholders' equity	30,189	22,225
Noncontrolling interests in subsidiaries	826	850
Total liabilities and equity	$ 62,131	$ 52,148

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

Tesla, Inc.

Consolidated Statements of Operations
(in millions, except per share data)

	Year Ended December 31,		
	2021	**2020**	**2019**
Revenues			
Automotive sales	$ 44,125	$ 24,604	$ 19,358
Automotive regulatory credits	1,465	1,580	594
Automotive leasing	1,642	1,052	869
Total automotive revenues	47,232	27,236	20,821
Energy generation and storage	2,789	1,994	1,531
Services and other	3,802	2,306	2,226
Total revenues	53,823	31,536	24,578
Cost of revenues			
Automotive sales	32,415	19,696	15,939
Automotive leasing	978	563	459
Total automotive cost of revenues	33,393	20,259	16,398
Energy generation and storage	2,918	1,976	1,341
Services and other	3,906	2,671	2,770
Total cost of revenues	40,217	24,906	20,509
Gross profit	13,606	6,630	4,069
Operating expenses			
Research and development	2,593	1,491	1,343
Selling, general and administrative	4,517	3,145	2,646
Restructuring and other	(27)	—	149
Total operating expenses	7,083	4,636	4,138
Income (loss) from operations	6,523	1,994	(69)
Interest income	56	30	44
Interest expense	(371)	(748)	(685)
Other income (expense), net	135	(122)	45
Income (loss) before income taxes	6,343	1,154	(665)
Provision for income taxes	699	292	110
Net income (loss)	5,644	862	(775)
Net income attributable to noncontrolling interests and redeemable noncontrolling interests in subsidiaries	125	141	87
Net income (loss) attributable to common stockholders	$ 5,519	$ 721	$ (862)
Net income (loss) per share of common stock attributable to common stockholders			
Basic	$ 5.60	$ 0.74	$ (0.98)
Diluted	$ 4.90	$ 0.64	$ (0.98)

Weighted average shares used in computing net income (loss) per share of common stock			
Basic	986	933	887
Diluted	1,129	1,083	887

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

Tesla, Inc.

Consolidated Statements of Comprehensive Income (Loss)
(in millions)

	Year Ended December 31,		
	2021	2020	2019
Net income (loss)	$ 5,644	$ 862	$ (775)
Other comprehensive income (loss):			
Foreign currency translation adjustment	(308)	399	(28)
Unrealized net loss on marketable securities	(1)	—	—
Comprehensive income (loss)	5,335	1,261	(803)
Less: Comprehensive income attributable to noncontrolling interests and redeemable noncontrolling interests in subsidiaries	125	141	87
Comprehensive income (loss) attributable to common stockholders	$ 5,210	$ 1,120	$ (890)

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

Tesla, Inc.

Consolidated Statements of Redeemable Noncontrolling Interests and Equity
(in millions, except per share data)

	Redeemable Noncontrolling Interests	Common Stock Shares	Common Stock Amount	Additional Paid-In Capital	Accumulated Other Comprehensive (Loss) Income	(Accumulated Deficit) Retained Earnings	Total Stockholders' Equity	Noncontrolling Interests in Subsidiaries	Total Equity
Balance as of December 31, 2018	$ 556	863	$ 1	$ 10,248	$ (8)	$ (5,318)	$ 4,923	$ 834	$ 5,757
Adjustments for prior periods from adopting ASC 842	—	—	—	—	—	97	97	—	97
Conversion feature of 2.00% Convertible Senior Notes due in 2024 ("2024 Notes")	—	—	—	491	—	—	491	—	491
Purchase of convertible note hedges	—	—	—	(476)	—	—	(476)	—	(476)
Sales of warrants	—	—	—	174	—	—	174	—	174
Issuance of common stock for equity incentive awards and acquisitions, net of transaction costs	—	24	0	482	—	—	482	—	482
Issuance of common stock in May 2019 public offering at $48.60 per share, net of issuance costs of $15	—	18	0	848	—	—	848	—	848
Stock-based compensation	—	—	—	973	—	—	973	—	973
Contributions from noncontrolling interests	105	—	—	—	—	—	—	174	174
Distributions to noncontrolling interests	(65)	—	—	—	—	—	—	(198)	(198)
Other	(1)	—	—	(4)	—	—	(4)	—	(4)
Net income (loss)	48	—	—	—	—	(862)	(862)	39	(823)
Other comprehensive loss	—	—	—	—	(28)	—	(28)	—	(28)
Balance as of December 31, 2019	$ 643	905	$ 1	$ 12,736	$ (36)	$ (6,083)	$ 6,618	$ 849	$ 7,467
Adjustments for prior periods from adopting ASU 2016-13	—	—	—	—	—	(37)	(37)	—	(37)
Reclassification between equity and mezzanine equity for convertible senior notes	—	—	—	(51)	—	—	(51)	—	(51)
Exercises of conversion feature of convertible senior notes	—	2	0	59	—	—	59	—	59
Issuance of common stock for equity incentive awards	—	19	0	417	—	—	417	—	417
Issuance of common stock in public offerings, net of issuance costs of $68	—	34	0	12,269	—	—	12,269	—	12,269
Stock-based compensation	—	—	—	1,861	—	—	1,861	—	1,861
Contributions from noncontrolling interests	7	—	—	—	—	—	—	17	17
Distributions to noncontrolling interests	(67)	—	—	—	—	—	—	(132)	(132)
Buy-outs of noncontrolling interests	(4)	—	—	(31)	—	—	(31)	—	(31)
Net income	25	—	—	—	—	721	721	116	837
Other comprehensive income	—	—	—	—	399	—	399	—	399
Balance as of December 31, 2020	$ 604	960	$ 1	$ 27,260	$ 363	$ (5,399)	$ 22,225	$ 850	$ 23,075
Adjustments for prior periods from adopting ASU 2020-06	—	—	—	(474)	—	211	(263)	—	(263)
Exercises of conversion feature of convertible senior notes	—	1	0	6	—	—	6	—	6
Settlements of warrants	—	37	0	—	—	—	—	—	—
Issuance of common stock for equity incentive awards	—	35	0	707	—	—	707	—	707
Stock-based compensation	—	—	—	2,299	—	—	2,299	—	2,299
Contributions from noncontrolling interests	2	—	—	—	—	—	—	—	—
Distributions to noncontrolling interests	(66)	—	—	—	—	—	—	(106)	(106)

Buy-outs of noncontrolling interests	(15)	—	—	5	—	—	5	—	5
Net income	43	—	—	—	—	5,519	5,519	82	5,601
Other comprehensive loss	—	—	—	—	(309)	—	(309)	—	(309)
Balance as of December 31, 2021	$ 568	1,033	$ 1	$ 29,803	$ 54	$ 331	$ 30,189	$ 826	$ 31,015

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

Tesla, Inc.

Consolidated Statements of Cash Flows
(in millions)

	Year Ended December 31,		
	2021	2020	2019
Cash Flows from Operating Activities			
Net income (loss)	$ 5,644	$ 862	$ (775)
Adjustments to reconcile net income (loss) to net cash provided by operating activities:			
Depreciation, amortization and impairment	2,911	2,322	2,154
Stock-based compensation	2,121	1,734	898
Inventory and purchase commitments write-downs	140	202	193
Foreign currency transaction net unrealized (gain) loss	(55)	114	(48)
Non-cash interest and other operating activities	245	525	520
Digital assets gain, net	(27)	—	—
Operating cash flow related to repayment of discounted convertible senior notes	—	—	(188)
Changes in operating assets and liabilities:			
Accounts receivable	(130)	(652)	(367)
Inventory	(1,709)	(422)	(429)
Operating lease vehicles	(2,114)	(1,072)	(764)
Prepaid expenses and other current assets	(271)	(251)	(288)
Other non-current assets	(1,291)	(344)	115
Accounts payable and accrued liabilities	4,578	2,102	646
Deferred revenue	793	321	801
Customer deposits	186	7	(58)
Other long-term liabilities	476	495	(5)
Net cash provided by operating activities	11,497	5,943	2,405
Cash Flows from Investing Activities			
Purchases of property and equipment excluding finance leases, net of sales	(6,482)	(3,157)	(1,327)
Purchases of solar energy systems, net of sales	(32)	(75)	(105)
Purchases of digital assets	(1,500)	—	—
Proceeds from sales of digital assets	272	—	—
Purchases of marketable securities	(132)	—	—
Receipt of government grants	6	123	46
Purchase of intangible assets	—	(10)	(5)
Business combinations, net of cash acquired	—	(13)	(45)
Net cash used in investing activities	(7,868)	(3,132)	(1,436)
Cash Flows from Financing Activities			
Proceeds from issuances of common stock in public offerings, net of issuance costs	—	12,269	848
Proceeds from issuances of convertible and other debt	8,883	9,713	10,669
Repayments of convertible and other debt	(14,167)	(11,623)	(9,161)
Collateralized lease repayments	(9)	(240)	(389)
Proceeds from exercises of stock options and other stock issuances	707	417	263
Principal payments on finance leases	(439)	(338)	(321)
Debt issuance costs	(9)	(6)	(37)
Purchase of convertible note hedges	—	—	(476)
Proceeds from issuance of warrants	—	—	174
Proceeds from investments by noncontrolling interests in subsidiaries	2	24	279
Distributions paid to noncontrolling interests in subsidiaries	(161)	(208)	(311)

Payments for buy-outs of noncontrolling interests in subsidiaries	(10)	(35)	(9)
Net cash (used in) provided by financing activities	(5,203)	9,973	1,529
Effect of exchange rate changes on cash and cash equivalents and restricted cash	(183)	334	8
Net (decrease) increase in cash and cash equivalents and restricted cash	(1,757)	13,118	2,506
Cash and cash equivalents and restricted cash, beginning of period	19,901	6,783	4,277
Cash and cash equivalents and restricted cash, end of period	$ 18,144	$ 19,901	$ 6,783
Supplemental Non-Cash Investing and Financing Activities			
Equity issued in connection with business combination	$ —	$ —	$ 207
Acquisitions of property and equipment included in liabilities	$ 2,251	$ 1,088	$ 562
Supplemental Disclosures			
Cash paid during the period for interest, net of amounts capitalized	$ 266	$ 444	$ 455
Cash paid during the period for taxes, net of refunds	$ 561	$ 115	$ 54

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

Tesla, Inc.

Notes to Consolidated Financial Statements

Note 1 – Overview

Tesla, Inc. ("Tesla", the "Company", "we", "us" or "our") was incorporated in the State of Delaware on July 1, 2003. We design, develop, manufacture and sell high-performance fully electric vehicles and design, manufacture, install and sell solar energy generation and energy storage products. Our Chief Executive Officer, as the chief operating decision maker ("CODM"), organizes our company, manages resource allocations and measures performance among two operating and reportable segments: (i) automotive and (ii) energy generation and storage.

There has continued to be widespread impact from the coronavirus disease ("COVID-19") pandemic. Beginning in the first quarter of 2021, there has been a trend in many parts of the world of increasing availability and administration of vaccines against COVID-19, as well as an easing of restrictions on social, business, travel and government activities and functions. On the other hand, infection rates and regulations continue to fluctuate in various regions and there are ongoing global impacts resulting from the pandemic, including challenges and increases in costs for logistics and supply chains, such as increased port congestion, intermittent supplier delays and a shortfall of semiconductor supply. We have also previously been affected by temporary manufacturing closures, employment and compensation adjustments and impediments to administrative activities supporting our product deliveries and deployments.

Note 2 – Summary of Significant Accounting Policies

Principles of Consolidation

The accompanying consolidated financial statements have been prepared in conformity with U.S. generally accepted accounting principles ("GAAP") and reflect our accounts and operations and those of our subsidiaries in which we have a controlling financial interest. In accordance with the provisions of Accounting Standards Codification ("ASC") 810, *Consolidation*, we consolidate any variable interest entity ("VIE") of which we are the primary beneficiary. We have formed VIEs with financing fund investors in the ordinary course of business in order to facilitate the funding and monetization of certain attributes associated with solar energy systems and leases under our direct vehicle leasing programs. The typical condition for a controlling financial interest ownership is holding a majority of the voting interests of an entity; however, a controlling financial interest may also exist in entities, such as VIEs, through arrangements that do not involve controlling voting interests. ASC 810 requires a variable interest holder to consolidate a VIE if that party has the power to direct the activities of the VIE that most significantly impact the VIE's economic performance and the obligation to absorb losses of the VIE that could potentially be significant to the VIE or the right to receive benefits from the VIE that could potentially be significant to the VIE. We do not consolidate a VIE in which we have a majority ownership interest when we are not considered the primary beneficiary. We have determined that we are the primary beneficiary of all the VIEs (see *Note 16, Variable Interest Entity Arrangements*). We evaluate our relationships with all the VIEs on an ongoing basis to ensure that we continue to be the primary beneficiary. All intercompany transactions and balances have been eliminated upon consolidation.

Use of Estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues, costs and expenses and related disclosures in the accompanying notes.

Due to the COVID-19 pandemic, there has been uncertainty and disruption in the global economy and financial markets which could impact our estimates and assumptions. We have assessed the impact and are not aware of any specific events or circumstances that required an update to our estimates and assumptions or materially affected the carrying value of our assets or liabilities as of the date of issuance of this Annual Report on Form 10-K. These estimates may change as new events occur and additional information is obtained. Actual results could differ materially from these estimates under different assumptions or conditions.

Reclassifications

Certain prior period balances have been reclassified to conform to the current period presentation in the consolidated financial statements and the accompanying notes.

Revenue Recognition

Revenue by source

The following table disaggregates our revenue by major source (in millions):

	Year Ended December 31,		
	2021	2020	2019
Automotive sales without resale value guarantee	$ 43,186	$ 24,053	$ 19,212
Automotive sales with resale value guarantee (1)	939	551	146
Automotive regulatory credits	1,465	1,580	594
Energy generation and storage sales	2,279	1,477	1,000
Services and other	3,802	2,306	2,226
Total revenues from sales and services	51,671	29,967	23,178
Automotive leasing	1,642	1,052	869
Energy generation and storage leasing	510	517	531
Total revenues	$ 53,823	$ 31,536	$ 24,578

(1) Pricing adjustments on our vehicle offerings can impact the estimate of likelihood that customers would exercise their resale value guarantees, resulting in an adjustment of our sales return reserve on vehicles sold with resale value guarantees. Actual return rates being lower than expected and increases in resale values of our vehicles in 2021 resulted in a net release of our reserve of $365 million, which represented an increase in automotive sales revenue. For the years ended December 31, 2020 and 2019, vehicle pricing reductions resulted in an increase of our reserve of $72 million and $555 million, respectively, which represented decreases in automotive sales revenue.

Automotive Segment

Automotive Sales Revenue

Automotive Sales without Resale Value Guarantee

Automotive sales revenue includes revenues related to deliveries of new vehicles and pay-per-use charges, and specific other features and services that meet the definition of a performance obligation under ASC 606, including access to our Supercharger network, internet connectivity, Full Self Driving ("FSD") features and over-the-air software updates. We recognize revenue on automotive sales upon delivery to the customer, which is when the control of a vehicle transfers. Payments are typically received at the point control transfers or in accordance with payment terms customary to the business. Other features and services such as access to our Supercharger network, internet connectivity and over-the-air software updates are provisioned upon control transfer of a vehicle and recognized over time on a straight-line basis as we have a stand-ready obligation to deliver such services to the customer. We recognize revenue related to these other features and services over the performance period, which is generally the estimated useful life of the vehicle. Revenue related to FSD features is recognized when functionality is delivered to the customer. For our obligations related to automotive sales, we estimate standalone selling price by considering costs used to develop and deliver the service, third-party pricing of similar options and other information that may be available.

At the time of revenue recognition, we reduce the transaction price and record a sales return reserve against revenue for estimated variable consideration related to future product returns. Such return rate estimates are based on historical experience and are immaterial in all periods presented. In addition, any fees that are paid or payable by us to a customer’s lender when we arrange the financing are recognized as an offset against automotive sales revenue.

Costs to obtain a contract mainly relate to commissions paid to our sales personnel for the sale of vehicles. Commissions are not paid on other obligations such as access to our Supercharger network, internet connectivity, FSD features and over-the-air software updates. As our contract costs related to automotive sales are typically fulfilled

within one year, the costs to obtain a contract are expensed as incurred. Amounts billed to customers related to shipping and handling are classified as automotive sales revenue, and we have elected to recognize the cost for freight and shipping when control over vehicles, parts or accessories have transferred to the customer as an expense in cost of automotive sales revenue. Our policy is to exclude taxes collected from a customer from the transaction price of automotive contracts.

Automotive Sales with Resale Value Guarantee or a Buyback Option

We offer resale value guarantees or similar buy-back terms to certain international customers who purchase vehicles and who finance their vehicles through one of our specified commercial banking partners. We also offer resale value guarantees in connection with automotive sales to certain leasing partners. Under these programs, we receive full payment for the vehicle sales price at the time of delivery and our counterparty has the option of selling their vehicle back to us during the guarantee period, which currently is generally at the end of the term of the applicable loan or financing program, for a pre-determined resale value.

We recognize revenue when control transfers upon delivery to customers in accordance with ASC 606 as a sale with a right of return when we do not believe the customer has a significant economic incentive to exercise the resale value guarantee provided to them at contract inception. The process to determine whether there is a significant economic incentive includes a comparison of a vehicle's estimated market value at the time the option is exercisable with the guaranteed resale value to determine the customer's economic incentive to exercise. The performance obligations and the pattern of recognizing automotive sales with resale value guarantees are consistent with automotive sales without resale value guarantees with the exception of our estimate for sales return reserve. Sales return reserves for automotive sales with resale value guarantees are estimated based on historical experience plus consideration for expected future market values. On a quarterly basis, we assess the estimated market values of vehicles sold with resale value guarantees to determine whether there have been changes to the likelihood of future product returns. As we accumulate more data related to the resale values of our vehicles or as market conditions change, there may be material changes to their estimated values.

Due to actual return rates being lower than expected and increases in resale values of our vehicles during 2021, we estimated that there is a lower future likelihood that customers will exercise their resale value guarantees. We adjusted our sales return reserve on vehicles sold with resale value guarantees resulting in an increase of automotive sales revenues of $365 million for the year ended December 31, 2021 and a corresponding increase in cost of automotive sales of $286 million. The net benefit in gross profit was $79 million for the year ended December 31, 2021. The total sales return reserve on vehicles sold with resale value guarantees was $223 million and $703 million as of December 31, 2021 and December 31, 2020, respectively, of which $91 million and $202 million was short term, respectively.

Deferred revenue activity related to the access to our Supercharger network, internet connectivity, FSD features and over-the-air software updates on automotive sales with and without resale value guarantee consisted of the following (in millions):

	Year ended December 31,	
	2021	2020
Deferred revenue on automotive sales with and without resale value guarantee— beginning of period	$ 1,926	$ 1,472
Additions	847	724
Net changes in liability for pre-existing contracts	(25)	56
Revenue recognized	(366)	(326)
Deferred revenue on automotive sales with and without resale value guarantee— end of period	$ 2,382	$ 1,926

Deferred revenue is equivalent to the total transaction price allocated to the performance obligations that are unsatisfied, or partially unsatisfied, as of the balance sheet date. Revenue recognized from the deferred revenue balance as of December 31, 2020 and 2019 was $312 million and $283 million for the years ended December 31, 2021 and 2020, respectively. Of the total deferred revenue on automotive sales with and without resale value guarantees as of December 31, 2021, we expect to recognize $962 million of revenue in the next 12 months. The remaining balance will be recognized over the performance period as discussed above in Automotive Sales without Resale Value Guarantee.

Automotive Regulatory Credits

We earn tradable credits in the operation of our automotive business under various regulations related to zero-emission vehicles, greenhouse gas, fuel economy and clean fuel. We sell these credits to other regulated entities who can use the credits to comply with emission standards and other regulatory requirements.

Payments for automotive regulatory credits are typically received at the point control transfers to the customer, or in accordance with payment terms customary to the business. We recognize revenue on the sale of automotive regulatory credits, which have negligible incremental costs associated with them, at the time control of the regulatory credits is transferred to the purchasing party. Revenue from the sale of automotive regulatory credits totaled $1.46 billion, $1.58 billion and $594 million for the years ended December 31, 2021, 2020 and 2019, respectively. Deferred revenue related to sales of automotive regulatory credits was immaterial as of December 31, 2021 and 2020, respectively. Revenue recognized from the deferred revenue balance as of December 31, 2020 and 2019 was immaterial and $140 million for the years ended December 31, 2021 and 2020, respectively.

Automotive Leasing Revenue

Direct Vehicle Operating Leasing Program

We have outstanding leases under our direct vehicle operating leasing programs in the U.S., Canada and in certain countries in Europe. Qualifying customers are permitted to lease a vehicle directly from Tesla for up to 48 months. At the end of the lease term, customers are required to return the vehicles to us or, for Model S and Model X in certain regions, may opt to purchase the vehicles for a pre-determined residual value. We account for these leasing transactions as operating leases. We record leasing revenues to automotive leasing revenue on a straight-line basis over the contractual term, and we record the depreciation of these vehicles to cost of automotive leasing revenue. For the years ended December 31, 2021, 2020 and 2019, we recognized $1.25 billion, $752 million and $532 million of direct vehicle leasing revenue, respectively. As of December 31, 2021 and 2020, we had deferred $392 million and $293 million, respectively, of lease-related upfront payments, which will be recognized on a straight-line basis over the contractual terms of the individual leases.

Our policy is to exclude taxes collected from a customer from the transaction price of automotive contracts.

Direct Sales-Type Leasing Program

We have outstanding direct leases and vehicles financed by us under loan arrangements accounted for as sales-type leases under ASC 842 in certain countries in Asia and Europe, which we introduced during the third quarter of 2020. Depending on the specific program, customers may or may not have a right to return the vehicle to us during or at the end of the lease term. If the customer does not have a right to return, the customer will take title to the vehicle at the end of the lease term after making all contractual payments. Under the programs for which there is a right to return, the purchase option is reasonably certain to be exercised by the lessee and we therefore expect the customer to take title to the vehicle at the end of the lease term after making all contractual payments. Qualifying customers are permitted to lease a vehicle directly under these programs for up to 48 months. Our loan arrangements under these programs can have terms for up to 72 months. We recognize all revenue and costs associated with the sales-type lease as automotive leasing revenue and automotive leasing cost of revenue, respectively, upon delivery of the vehicle to the customer. Interest income based on the implicit rate in the lease is recorded to automotive leasing revenue over time as customers are invoiced on a monthly basis. For the years ended December 31, 2021 and 2020, we recognized $369 million and $120 million, respectively, of sales-type leasing revenue and $234 million and $87 million, respectively, of sales-type leasing cost of revenue.

Services and Other Revenue

Services and other revenue consists of non-warranty after-sales vehicle services, sales of used vehicles, retail merchandise, sales by our acquired subsidiaries to third party customers and vehicle insurance revenue.

Revenues related to repair and maintenance services are recognized over time as services are provided and extended service plans are recognized over the performance period of the service contract as the obligation represents a stand-ready obligation to the customer. We sell used vehicles, services, service plans, vehicle components and merchandise separately and thus use standalone selling prices as the basis for revenue allocation to the extent that these items are sold in transactions with other performance obligations. Payment for used vehicles, services, and merchandise are typically received at the point when control transfers to the customer or in accordance with payment terms customary to the business. Payments received for prepaid plans are refundable upon customer cancellation of the related contracts and are included within customer deposits on the consolidated balance sheets. Deferred revenue related to services and other revenue was immaterial as of December 31, 2021 and 2020.

Energy Generation and Storage Segment

Energy Generation and Storage Sales

Energy generation and storage sales revenue consists of the sale of solar energy systems and energy storage systems to residential, small commercial, large commercial and utility grade customers. Energy generation and storage sales revenue also includes revenue from agreements for solar energy systems and power purchase agreements ("PPAs") that commence after January 1, 2019, which is recognized as earned, based on the amount of capacity provided for solar energy systems or electricity delivered for PPAs at the contractual billing rates, assuming all other revenue recognition criteria have been met. Under the practical expedient available under ASC 606-10-55-18, we recognize revenue based on the value of the service which is consistent with the billing amount. Sales of solar energy systems to residential and small scale commercial customers consist of the engineering, design and installation of the system. Post-installation, residential and small scale commercial customers receive a proprietary monitoring system that captures and displays historical energy generation data. Residential and small scale commercial customers pay the full purchase price of the solar energy system upfront. Revenue for the design and installation obligation is recognized when control transfers, which is when we install a solar energy system and the system passes inspection by the utility or the authority having jurisdiction. Sales of energy storage systems to residential and small scale commercial customers consist of the installation of the energy storage system and revenue is recognized when control transfers, which is when the product has been delivered or, if we are performing installation, when installed and commissioned. Payment for such storage systems is made upon invoice or in accordance with payment terms customary to the business.

For large commercial and utility grade solar energy system and energy storage system sales which consist of the engineering, design and installation of the system, customers make milestone payments that are consistent with contract-specific phases of a project. Revenue from such contracts is recognized over time using the percentage of completion method based on cost incurred as a percentage of total estimated contract costs for energy storage system sales and as a percentage of total estimated labor hours for solar energy system sales. Certain large-scale commercial and utility grade solar energy system and energy storage system sales also include operations and maintenance service which are negotiated with the design and installation contracts and are thus considered to be a combined contract with the design and installation service. For certain large commercial and utility grade solar energy systems and energy storage systems where the percentage of completion method does not apply, revenue is recognized when control transfers, which is when the product has been delivered to the customer and commissioned for energy storage systems and when the project has received permission to operate from the utility for solar energy systems. Operations and maintenance service revenue is recognized ratably over the respective contract term for solar energy system sales and upon delivery of the service for energy storage system sales. Customer payments for such services are usually paid annually or quarterly in advance.

In instances where there are multiple performance obligations in a single contract, we allocate the consideration to the various obligations in the contract based on the relative standalone selling price method. Standalone selling prices are estimated based on estimated costs plus margin or by using market data for comparable products. Costs incurred on the sale of residential installations before the solar energy systems are completed are included as work in process within inventory in the consolidated balance sheets. Any fees that are paid or payable by us to a solar loan lender would be recognized as an offset against revenue. Costs to obtain a contract relate mainly to commissions paid to our sales personnel related to the sale of solar energy systems and energy storage systems. As our contract costs related to solar energy system and energy storage system sales are typically fulfilled within one year, the costs to obtain a contract are expensed as incurred.

As part of our solar energy system and energy storage system contracts, we may provide the customer with performance guarantees that warrant that the underlying system will meet or exceed the minimum energy generation or energy performance requirements specified in the contract. In certain instances, we may receive a bonus payment if the system performs above a specified level. Conversely, if a solar energy system or energy storage system does not meet the performance guarantee requirements, we may be required to pay liquidated damages. Other forms of variable consideration related to our large commercial and utility grade solar energy system and energy storage system contracts include variable customer payments that will be made based on our energy market participation activities. Such guarantees and variable customer payments represent a form of variable consideration and are estimated at contract inception at their most likely amount and updated at the end of each reporting period as additional performance data becomes available. Such estimates are included in the transaction price only to the extent that it is probable a significant reversal of revenue will not occur.

We record as deferred revenue any non-refundable amounts that are collected from customers related to fees charged for prepayments and remote monitoring service and operations and maintenance service, which is recognized as revenue ratably over the respective customer contract term. As of December 31, 2021 and 2020, deferred revenue related to such customer payments amounted to $399 million and $187 million, respectively. Revenue recognized from the deferred revenue balance as of December 31, 2020 and 2019 was $93 million and $34 million for the years ended December 31, 2021 and 2020, respectively. We have elected the practical expedient to omit disclosure of the amount of the transaction price allocated to remaining performance obligations for energy generation and storage sales with an original expected contract length of one year or less and the amount that we have the right to invoice when that amount corresponds directly with the value of the performance to date. As of December 31, 2021, total transaction price allocated to performance obligations that were unsatisfied or partially unsatisfied for contracts with an original expected length of more than one year was $152 million. Of this amount, we expect to recognize $9 million in the next 12 months and the remaining over a period up to 26 years.

Energy Generation and Storage Leasing

For revenue arrangements where we are the lessor under operating lease agreements for energy generation and storage products, we record lease revenue from minimum lease payments, including upfront rebates and incentives earned from such systems, on a straight-line basis over the life of the lease term, assuming all other revenue recognition criteria have been met. The difference between the payments received and the revenue recognized is recorded as deferred revenue or deferred asset on the consolidated balance sheet.

For solar energy systems where customers purchase electricity from us under PPAs prior to January 1, 2019, we have determined that these agreements should be accounted for as operating leases pursuant to ASC 840. Revenue is recognized based on the amount of electricity delivered at rates specified under the contracts, assuming all other revenue recognition criteria are met.

We record as deferred revenue any amounts that are collected from customers, including lease prepayments, in excess of revenue recognized and operations and maintenance service fees, which is recognized as revenue ratably over the respective customer contract term. As of December 31, 2021 and 2020, deferred revenue related to such customer payments amounted to $198 million and $206 million, respectively. Deferred revenue also includes the portion of rebates and incentives received from utility companies and various local and state government agencies, which is recognized as revenue over the lease term. As of December 31, 2021 and 2020, deferred revenue from rebates and incentives amounted to $27 million and $29 million, respectively.

We capitalize initial direct costs from the execution of agreements for solar energy systems and PPAs, which include the referral fees and sales commissions, as an element of solar energy systems, net, and subsequently amortize these costs over the term of the related agreements.

Cost of Revenues

Automotive Segment

Automotive Sales

Cost of automotive sales revenue includes direct and indirect materials, labor costs, manufacturing overhead, including depreciation costs of tooling and machinery, shipping and logistic costs, vehicle connectivity costs, allocations of electricity and infrastructure costs related to our Supercharger network and reserves for estimated warranty expenses. Cost of automotive sales revenues also includes adjustments to warranty expense and charges to write down the carrying value of our inventory when it exceeds its estimated net realizable value and to provide for obsolete and on-hand inventory in excess of forecasted demand.

Automotive Leasing

Cost of automotive leasing revenue includes the depreciation of operating lease vehicles, cost of goods sold associated with direct sales-type leases and warranty expense related to leased vehicles. Cost of automotive leasing revenue also includes vehicle connectivity costs and allocations of electricity and infrastructure costs related to our Supercharger network for vehicles under our leasing programs.

Services and Other

Costs of services and other revenue includes costs associated with providing non-warranty after-sales services, cost of used vehicles including refurbishment costs, costs for retail merchandise and costs to provide vehicle insurance. Cost of services and other revenue also includes direct parts, material and labor costs and manufacturing overhead associated with the sales by our acquired subsidiaries to third party customers.

Energy Generation and Storage Segment

Energy Generation and Storage

Cost of energy generation and storage revenue includes direct and indirect material and labor costs, warehouse rent, freight, warranty expense, other overhead costs and amortization of certain acquired intangible assets. Cost of energy generation and storage revenue also includes charges to write down the carrying value of our inventory when it exceeds its estimated net realizable value and to provide for obsolete and on-hand inventory in excess of forecasted demand. In agreements for solar energy systems and PPAs where we are the lessor, the cost of revenue is primarily comprised of depreciation of the cost of leased solar energy systems, maintenance costs associated with those systems and amortization of any initial direct costs.

Leases

We adopted ASC 842, Leases, as of January 1, 2019 using the cumulative effect adjustment approach (“adoption of the new lease standard”). In addition, we elected the package of practical expedients permitted under the transition guidance within the new standard, which allowed us to carry forward the historical determination of contracts as leases, lease classification and not reassess initial direct costs for historical lease arrangements. The finance lease classification under ASC 842 includes leases previously classified as capital leases under ASC 840.

Research and Development Costs

Research and development costs are expensed as incurred.

Marketing, Promotional and Advertising Costs

Marketing, promotional and advertising costs are expensed as incurred and are included as an element of selling, general and administrative expense in the consolidated statement of operations. Marketing, promotional and advertising costs were immaterial for the years ended December 31, 2021, 2020 and 2019.

Income Taxes

Income taxes are computed using the asset and liability method, under which deferred tax assets and liabilities are determined based on the difference between the financial statement and tax bases of assets and liabilities using enacted tax rates in effect for the year in which the differences are expected to affect taxable income. Valuation allowances are established when necessary to reduce deferred tax assets to the amount expected to be realized.

We record liabilities related to uncertain tax positions when, despite our belief that our tax return positions are supportable, we believe that it is more likely than not that those positions may not be fully sustained upon review by tax authorities. Accrued interest and penalties related to unrecognized tax benefits are classified as income tax expense.

The Tax Cuts and Jobs Act ("TCJA") subjects a U.S. shareholder to tax on global intangible low-taxed income (“GILTI”) earned by certain foreign subsidiaries. Under GAAP, we can make an accounting policy election to either treat taxes due on the GILTI inclusion as a current period expense or factor such amounts into our measurement of deferred taxes. We elected the deferred method, under which we recorded the corresponding deferred tax assets and liabilities on our consolidated balance sheets, currently subject to valuation allowance.

Comprehensive Income (Loss)

Comprehensive income (loss) is comprised of net income (loss) and other comprehensive income (loss). Other comprehensive income (loss) consists of foreign currency translation adjustments and unrealized net gains and losses on marketable securities that have been excluded from the determination of net income (loss).

Stock-Based Compensation

We use the fair value method of accounting for our stock options and restricted stock units ("RSUs") granted to employees and for our employee stock purchase plan (the "ESPP") to measure the cost of employee services received in exchange for the stock-based awards. The fair value of stock option awards with only service and/or performance conditions is estimated on the grant or offering date using the Black-Scholes option-pricing model. The Black-Scholes option-pricing model requires inputs such as the risk-free interest rate, expected term and expected volatility. These inputs are subjective and generally require significant judgment. The fair value of RSUs is measured on the grant date based on the closing fair market value of our common stock. The resulting cost is recognized over the period during which an employee is required to provide service in exchange for the awards, usually the vesting period, which is generally four years for stock options and RSUs and six months for the ESPP. Stock-based compensation expense is recognized on a straight-line basis, net of actual forfeitures in the period.

For performance-based awards, stock-based compensation expense is recognized over the expected performance achievement period of individual performance milestones when the achievement of each individual performance milestone becomes probable. For performance-based awards with a vesting schedule based entirely on the attainment of both performance and market conditions, stock-based compensation expense associated with each tranche is recognized over the longer of (i) the expected achievement period for the operational milestone for such tranche and (ii) the expected achievement period for the related market capitalization milestone determined on the grant date, beginning at the point in time when the relevant operational milestone is considered probable of being achieved. If such operational milestone becomes probable any time after the grant date, we will recognize a cumulative catch-up expense from the grant date to that point in time. If the related market capitalization milestone is achieved earlier than its expected achievement period and the achievement of the related operational milestone, then the stock-based compensation expense will be recognized over the expected achievement period for the operational milestone, which may accelerate the rate at which such expense is recognized. The fair value of such awards is estimated on the grant date using Monte Carlo simulations.

As we accumulate additional employee stock-based awards data over time and as we incorporate market data related to our common stock, we may calculate significantly different volatilities and expected lives, which could materially impact the valuation of our stock-based awards and the stock-based compensation expense that we will recognize in future periods. Stock-based compensation expense is recorded in Cost of revenues, Research and development expense and Selling, general and administrative expense in the consolidated statements of operations.

Noncontrolling Interests and Redeemable Noncontrolling Interests

Noncontrolling interests and redeemable noncontrolling interests represent third-party interests in the net assets under certain funding arrangements, or funds, that we have entered into to finance the costs of solar energy systems and vehicles under operating leases. We have determined that the contractual provisions of the funds represent substantive profit-sharing arrangements. We have further determined that the methodology for calculating the noncontrolling interest and redeemable noncontrolling interest balances that reflects the substantive profit-sharing arrangements is a balance sheet approach using the hypothetical liquidation at book value ("HLBV") method. We, therefore, determine the amount of the noncontrolling interests and redeemable noncontrolling interests in the net assets of the funds at each balance sheet date using the HLBV method, which is presented on the consolidated balance sheet as noncontrolling interests in subsidiaries and redeemable noncontrolling interests in subsidiaries. Under the HLBV method, the amounts reported as noncontrolling interests and redeemable noncontrolling interests in the consolidated balance sheet represent the amounts the third parties would hypothetically receive at each balance sheet date under the liquidation provisions of the funds, assuming the net assets of the funds were liquidated at their recorded amounts determined in accordance with GAAP and with tax laws effective at the balance sheet date and distributed to the third parties. The third parties' interests in the results of operations of the funds are determined as the difference in the noncontrolling interest and redeemable noncontrolling interest balances in the consolidated balance sheets between the start and end of each reporting period, after taking into account any capital transactions between the funds and the third parties. However, the redeemable noncontrolling interest balance is at least equal to the redemption amount. The redeemable noncontrolling interest balance is presented as temporary equity in the mezzanine section of the consolidated balance sheet since these third parties have the right to redeem their interests in the funds for cash or other assets. For certain funds, there may be significant fluctuations in net income (loss) attributable to noncontrolling interests and redeemable noncontrolling interests in subsidiaries due to changes in the liquidation provisions as time-based milestones are reached.

Net Income (Loss) per Share of Common Stock Attributable to Common Stockholders

Basic net income (loss) per share of common stock attributable to common stockholders is calculated by dividing net income (loss) attributable to common stockholders by the weighted-average shares of common stock outstanding for the period. Potentially dilutive shares, which are based on the weighted-average shares of common stock underlying outstanding stock-based awards, warrants and convertible senior notes using the treasury stock method or the if-converted method, as applicable, are included when calculating diluted net income (loss) per share of common stock attributable to common stockholders when their effect is dilutive.

On January 1, 2021, we adopted ASU 2020-06 using the modified retrospective method. Following this adoption, we utilize the if-converted method for diluted net income per share calculation of our convertible debt instruments (see *Recent Accounting Pronouncements* section below for further details). During the year ended December 31, 2021, we increased net income (loss) attributable to common stockholders by $9 million to arrive at the numerator used to calculate diluted net income per share, which represents the interest expense recognized on the convertible debt instruments that were subject to this change in methodology.

Prior to the adoption, we applied the treasury stock method when calculating the potential dilutive effect, if any, of the following convertible senior notes which we

intended to settle or have settled in cash the principal outstanding. Furthermore, in connection with the offerings of our convertible senior notes, we entered into convertible note hedges and warrants (see *Note 11, Debt*). However, our convertible note hedges are not included when calculating potentially dilutive shares since their effect is always anti-dilutive. The strike price on the warrants were below our average share price during the period and were in the money and included in the tables below. Warrants have been included in the weighted-average shares used in computing basic net income (loss) per share of common stock in the period(s) they are settled.

The following table presents the reconciliation of net income (loss) attributable to common stockholders to net income (loss) used in computing basic and diluted net income (loss) per share of common stock (in millions):

	Year Ended December 31,		
	2021	2020	2019
Net income (loss) attributable to common stockholders	$ 5,519	$ 721	$ (862)
Less: Buy-out of noncontrolling interest	(5)	31	8
Net income (loss) used in computing basic net income (loss) per share of common stock	5,524	690	(870)
Less: Dilutive convertible debt	(9)	—	—
Net income (loss) used in computing diluted net income (loss) per share of common stock	$ 5,533	$ 690	$ (870)

The following table presents the reconciliation of basic to diluted weighted average shares used in computing net income (loss) per share of common stock attributable to common stockholders (in millions):

	Year Ended December 31,		
	2021	2020	2019
Weighted average shares used in computing net income (loss) per share of common stock, basic	986	933	887
Add:			
Stock-based awards	98	66	—
Convertible senior notes (1)	10	47	—
Warrants	35	37	—
Weighted average shares used in computing net income (loss) per share of common stock, diluted	1,129	1,083	887

The following table presents the potentially dilutive shares that were excluded from the computation of diluted net income (loss) per share of common stock attributable to common stockholders, because their effect was anti-dilutive (in millions):

	Year Ended December 31,		
	2021	2020	2019
Stock-based awards	0	2	50
Convertible senior notes (1)	—	1	5

(1) Under the modified retrospective method of adoption of ASU 2020-06, the dilutive impact of convertible senior notes was calculated using the if-converted method for the year ended December 31, 2021. Certain convertible senior notes were calculated using the treasury stock method for the years ended December 31, 2020 and 2019. Refer to discussion above for further details.

Business Combinations

We account for business acquisitions under ASC 805, *Business Combinations*. The total purchase consideration for an acquisition is measured as the fair value of the assets given, equity instruments issued and liabilities assumed at the acquisition date. Costs that are directly attributable to the acquisition are expensed as incurred. Identifiable assets (including intangible assets), liabilities assumed (including contingent liabilities) and noncontrolling interests in an acquisition are measured initially at their fair values at the acquisition date. We recognize goodwill if the fair value of the total purchase consideration and any noncontrolling interests is in excess of the net fair value of the

identifiable assets acquired and the liabilities assumed. We recognize a bargain purchase gain within other income (expense), net, on the consolidated statement of operations if the net fair value of the identifiable assets acquired and the liabilities assumed is in excess of the fair value of the total purchase consideration and any noncontrolling interests. We include the results of operations of the acquired business in the consolidated financial statements beginning on the acquisition date.

Cash and Cash Equivalents

All highly liquid investments with an original maturity of three months or less at the date of purchase are considered cash equivalents. Our cash equivalents are primarily comprised of money market funds.

Restricted Cash

We maintain certain cash balances restricted as to withdrawal or use. Our restricted cash is comprised primarily of cash held to service certain payments under various secured debt facilities. In addition, restricted cash includes cash held as collateral for certain permits as well as sales to lease partners with a resale value guarantee, letters of credit, real estate leases, insurance policies, certain operating leases and cash received from certain fund investors that have not been released for use by us. We record restricted cash as other assets in the consolidated balance sheets and determine current or non-current classification based on the expected duration of the restriction.

Our total cash and cash equivalents and restricted cash, as presented in the consolidated statements of cash flows, was as follows (in millions):

	December 31, 2021	December 31, 2020	December 31, 2019
Cash and cash equivalents	$ 17,576	$ 19,384	$ 6,268
Restricted cash included in prepaid expenses and other current assets	345	238	246
Restricted cash included in other non-current assets	223	279	269
Total as presented in the consolidated statements of cash flows	$ 18,144	$ 19,901	$ 6,783

Marketable Securities

Marketable securities may be comprised of a combination of U.S. government securities and corporate debt securities and are all designated as available-for-sale and reported at estimated fair value, with unrealized gains and losses recorded in accumulated other comprehensive income which is included within stockholders' equity. Available-for-sale marketable securities with maturities greater than three months at the date of purchase are included in short-term marketable securities on our consolidated balance sheet. Interest, dividends, amortization and accretion of purchase premiums and discounts on our marketable securities are included in other income (expense), net.

The cost of available-for-sale marketable securities sold is based on the specific identification method. Realized gains and losses on the sale of available-for-sale marketable securities are recorded in other income (expense), net.

We regularly review all of our marketable securities for declines in fair value. The review includes but is not limited to (i) the consideration of the cause of the decline, (ii) any currently recorded expected credit losses and (iii) the creditworthiness of the respective security issuers. The amortized cost basis of our marketable securities approximates its fair value.

Accounts Receivable and Allowance for Doubtful Accounts

Accounts receivable primarily include amounts related to receivables from financial institutions and leasing companies offering various financing products to our customers, sales of energy generation and storage products, sales of regulatory credits to other automotive manufacturers, government rebates already passed through to customers and maintenance services on vehicles owned by leasing companies. We provide an allowance against accounts receivable for the amount we expect to be uncollectible. We write-off accounts receivable against the allowance when they are deemed uncollectible.

Depending on the day of the week on which the end of a fiscal quarter falls, our accounts receivable balance may fluctuate as we are waiting for certain customer payments to clear through our banking institutions and receipts of payments from our financing partners, which can take up to approximately two weeks based on the contractual payment terms with such partners. Our accounts receivable balances associated with our sales of regulatory credits, which are typically transferred to other manufacturers during the last few days of the quarter, is dependent on contractual payment terms. Additionally, government rebates can take up to a year or more to be collected depending on the customary processing timelines of the specific jurisdictions issuing them. These various factors may have a significant impact on our accounts receivable balance from period to period. As of December 31, 2021 and 2020, we had $627 million and $46 million, respectively, of long-term government rebates receivable in Other non-current assets on our consolidated balance sheets.

MyPower Customer Notes Receivable

We have customer notes receivable under the legacy MyPower loan program, which provided residential customers with the option to finance the purchase of a solar energy system through a 30-year loan. The outstanding balances, net of any allowance for expected credit losses, are presented on the consolidated balance sheets as a component of Prepaid expenses and other current assets for the current portion and as Other non-current assets for the long-term portion. In determining expected credit losses, we consider our historical level of credit losses, current economic trends, and reasonable and supportable forecasts that affect the collectability of the future cash flows. As of December 31, 2021 and 2020, the total outstanding balance of MyPower customer notes receivable, net of allowance for expected credit losses, was $299 million and $334 million, respectively, of which $11 million and $9 million were due in the next 12 months as of December 31, 2021 and 2020, respectively. As of December 31, 2021 and 2020, the allowance for expected credit losses was $41 million and $45 million, respectively.

Concentration of Risk

Credit Risk

Financial instruments that potentially subject us to a concentration of credit risk consist of cash, cash equivalents, marketable securities, restricted cash, accounts receivable, convertible note hedges, and interest rate swaps. Our cash balances are primarily invested in money market funds or on deposit at high credit quality financial institutions in the U.S. These deposits are typically in excess of insured limits. As of December 31, 2021 and 2020, no entity represented 10% or more of our total accounts receivable balance. The risk of concentration for our convertible note hedges and interest rate swaps is mitigated by transacting with several highly-rated multinational banks.

Supply Risk

We are dependent on our suppliers, including single source suppliers, and the inability of these suppliers to deliver necessary components of our products in a timely manner at prices, quality levels and volumes acceptable to us, or our inability to efficiently manage these components from these suppliers, could have a material adverse effect on our business, prospects, financial condition and operating results.

Inventory Valuation

Inventories are stated at the lower of cost or net realizable value. Cost is computed using standard cost for vehicles and energy storage products, which approximates actual cost on a first-in, first-out basis. In addition, cost for solar energy systems is recorded using actual cost. We record inventory write-downs for excess or obsolete inventories based upon assumptions about current and future demand forecasts. If our inventory on-hand is in excess of our future demand forecast, the excess amounts are written-off.

We also review our inventory to determine whether its carrying value exceeds the net amount realizable upon the ultimate sale of the inventory. This requires us to determine the estimated selling price of our vehicles less the estimated cost to convert the inventory on-hand into a finished product. Once inventory is written-down, a new, lower cost basis for that inventory is established and subsequent changes in facts and circumstances do not result in the restoration or increase in that newly established cost basis.

Should our estimates of future selling prices or production costs change, additional and potentially material write-downs may be required. A small change in our estimates may result in a material charge to our reported financial results.

Operating Lease Vehicles

Vehicles that are leased as part of our direct vehicle leasing program are classified as operating lease vehicles at cost less accumulated depreciation. We generally depreciate their cost, less residual value, using the straight-line-method to cost of automotive leasing revenue over the contractual period. The gross cost of operating lease vehicles as of December 31, 2021 and 2020 was $5.28 billion and $3.54 billion, respectively. Operating lease vehicles on the consolidated balance sheets are presented net of accumulated depreciation of $773 million and $446 million as of December 31, 2021 and 2020, respectively.

Digital Assets, Net

During the year ended December 31, 2021, we purchased an aggregate of $1.50 billion in bitcoin (a "digital asset") and briefly accepted bitcoin as a payment for sales of certain of our products in specified regions, subject to applicable laws. We account for such non-cash consideration at the time we enter into transactions with our customers in accordance with the non-cash consideration guidance included in the Accounting Standards Codification (“ASC”) 606, *Revenue from Contracts with Customers*, based on the then current quoted market prices of the digital assets.

We currently account for all digital assets held as a result of these transactions as indefinite-lived intangible assets in accordance with ASC 350, *Intangibles—Goodwill and Other*. We have ownership of and control over our digital assets and we may use third-party custodial services to secure it. The digital assets are initially recorded at cost and are subsequently remeasured on the consolidated balance sheet at cost, net of any impairment losses incurred since acquisition.

We determine the fair value of our digital assets on a nonrecurring basis in accordance with ASC 820, *Fair Value Measurement*, based on quoted prices on the active exchange(s) that we have determined is the principal market for such assets (Level 1 inputs). We perform an analysis each quarter to identify whether events or changes in circumstances, principally decreases in the quoted prices on active exchanges, indicate that it is more likely than not that our digital assets are impaired. In determining if an impairment has occurred, we consider the lowest market price of one unit of digital asset quoted on the active exchange since acquiring the digital asset. If the then current carrying value of a digital asset exceeds the fair value so determined, an impairment loss has occurred with respect to those digital assets in the amount equal to the difference between their carrying values and the price determined.

Impairment losses are recognized within Restructuring and other in the consolidated statements of operations in the period in which the impairment is identified. The impaired digital assets are written down to their fair value at the time of impairment and this new cost basis will not be adjusted upward for any subsequent increase in fair value. Gains are not recorded until realized upon sale(s), at which point they are presented net of any impairment losses for the same digital assets held within Restructuring and other. In determining the gain to be recognized upon sale, we calculate the difference between the sales price and carrying value of the digital assets sold immediately prior to sale.

See *Note 3, Digital Assets, Net*, for further information regarding digital assets.

Solar Energy Systems, Net

We are the lessor of solar energy systems. Solar energy systems are stated at cost less accumulated depreciation.

Depreciation and amortization is calculated using the straight-line method over the estimated useful lives of the respective assets, as follows:

Solar energy systems in service	30 to 35 years
Initial direct costs related to customer solar energy system lease acquisition costs	Lease term (up to 25 years)

Solar energy systems pending interconnection will be depreciated as solar energy systems in service when they have been interconnected and placed in-service. Solar energy systems under construction represents systems that are under installation, which will be depreciated as solar energy systems in service when they are completed, interconnected and placed in service. Initial direct costs related to customer solar energy system agreement acquisition costs are capitalized and amortized over the term of the related customer agreements.

Property, Plant and Equipment, Net

Property, plant and equipment, net, including leasehold improvements, are recognized at cost less accumulated depreciation. Depreciation is generally computed using the straight-line method over the estimated useful lives of the respective assets, as follows:

Machinery, equipment, vehicles and office furniture	3 to 15 years
Tooling	4 to 7 years
Building and building improvements	15 to 30 years
Computer equipment and software	3 to 10 years

Leasehold improvements are depreciated on a straight-line basis over the shorter of their estimated useful lives or the terms of the related leases.

Upon the retirement or sale of our property, plant and equipment, the cost and associated accumulated depreciation are removed from the consolidated balance sheet, and the resulting gain or loss is reflected on the consolidated statement of operations. Maintenance and repair expenditures are expensed as incurred while major improvements that increase the functionality, output or expected life of an asset are capitalized and depreciated ratably over the identified useful life.

Interest expense on outstanding debt is capitalized during the period of significant capital asset construction. Capitalized interest on construction in progress is included within Property, plant and equipment, net and is amortized over the life of the related assets.

Long-Lived Assets Including Acquired Intangible Assets

We review our property, plant and equipment, solar energy systems, long-term prepayments and intangible assets for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset (or asset group) may not be recoverable. We measure recoverability by comparing the carrying amount to the future undiscounted cash flows that the asset is expected to generate. If the asset is not recoverable, its carrying amount would be adjusted down to its fair value. For the years ended December 31, 2021 and 2020, we have recognized no material impairments of our long-lived assets. For the year ended December 31, 2019, we have recognized certain impairments of our long-lived assets (refer to *Note 19, Restructuring and Other*, for further details).

Intangible assets with definite lives are amortized on a straight-line basis over their estimated useful lives, which range from three to thirty years.

Goodwill

We assess goodwill for impairment annually in the fourth quarter, or more frequently if events or changes in circumstances indicate that it might be impaired, by comparing its carrying value to the reporting unit's fair value. For the years ended December 31, 2021, 2020, and 2019, we did not recognized any impairment of goodwill.

Capitalization of Software Costs

We capitalize costs incurred in the development of internal use software, during the application development stage to Property, plant and equipment, net on the consolidated balance sheets. Costs related to preliminary project activities and post-implementation activities are expensed as incurred. Such costs are amortized on a straight-line basis over its estimated useful life of three years.

Software development costs incurred in development of software to be sold, leased, or otherwise marketed, incurred subsequent to the establishment of technological feasibility and prior to the general availability of the software are capitalized when they are expected to become significant. Such costs are amortized over the estimated useful life of the applicable software once it is made generally available to our customers.

We evaluate the useful lives of these assets on an annual basis, and we test for impairment whenever events or changes in circumstances occur that could impact the recoverability of these assets. For the years ended December 31, 2021, 2020, and 2019, we have recognized no material impairments of capitalized software costs.

Foreign Currency

We determine the functional and reporting currency of each of our international subsidiaries and their operating divisions based on the primary currency in which they operate. In cases where the functional currency is not the U.S. dollar, we recognize a cumulative translation adjustment created by the different rates we apply to current period income or loss and the balance sheet. For each subsidiary, we apply the monthly average functional exchange rate to its monthly income or loss and the month-end functional currency rate to translate the balance sheet.

Foreign currency transaction gains and losses are a result of the effect of exchange rate changes on transactions denominated in currencies other than the functional currency. Transaction gains and losses are recognized in Other income (expense), net, in the consolidated statements of operations. For the years ended December 31, 2021, 2020 and 2019, we recorded a net foreign currency transaction gain of $97 million, loss of $114 million and gain of $48 million, respectively.

Warranties

We provide a manufacturer's warranty on all new and used vehicles and a warranty on the installation and components of the energy generation and storage systems we sell for periods typically between 10 to 25 years. We accrue a warranty reserve for the products sold by us, which includes our best estimate of the projected costs to repair or replace items under warranties and recalls if identified. These estimates are based on actual claims incurred to date and an estimate of the nature, frequency and costs of future claims. These estimates are inherently uncertain given our relatively short history of sales, and changes to our historical or projected warranty experience may cause material changes to the warranty reserve in the future. The warranty reserve does not include projected warranty costs associated with our vehicles subject to operating lease accounting and our solar energy systems under lease contracts or PPAs, as the costs to repair these warranty claims are expensed as incurred. The portion of the warranty reserve expected to be incurred within the next 12 months is included within Accrued liabilities and other, while the remaining balance is included within Other long-term liabilities on the consolidated balance sheets. Warranty expense is recorded as a component of Cost of revenues in the consolidated statements of operations. Due to the magnitude of our automotive business, accrued warranty balance is primarily related to our automotive segment. Accrued warranty activity consisted of the following (in millions):

	Year Ended December 31,		
	2021	2020	2019
Accrued warranty—beginning of period	$ 1,468	$ 1,089	$ 748
Warranty costs incurred	(525)	(312)	(250)
Net changes in liability for pre-existing warranties, including expirations and foreign exchange impact	102	66	36
Provision for warranty	1,056	625	555
Accrued warranty—end of period	$ 2,101	$ 1,468	$ 1,089

Customer Deposits

Customer deposits primarily consist of cash payments from customers at the time they place an order or reservation for a vehicle or an energy product and any additional payments up to the point of delivery or the completion of installation, including the fair values of any customer trade-in vehicles that are applicable toward a new vehicle purchase. Customer deposits also include prepayments on contracts that can be cancelled without significant penalties, such as vehicle maintenance plans. Customer deposit amounts and timing vary depending on the vehicle model, the energy product and the country of delivery. With the exception of a nominal order fee, customer deposits are fully refundable on vehicles prior to delivery and fully refundable in the case of an energy generation or storage product prior to the entry into a purchase agreement or in certain cases for a limited time thereafter (in accordance with applicable laws). Customer deposits are included in current liabilities until refunded, forfeited or applied towards the customer's purchase balance.

Solar Renewable Energy Credits

We account for Solar Renewable Energy Certificates ("SRECs") when they are purchased by us or sold to third parties. For SRECs generated by solar energy systems owned by us and minted by government agencies, we do not recognize any specifically identifiable costs as there are no specific incremental costs incurred to generate the SRECs. We recognize revenue within the energy generation and storage segment from the sale of an SREC when the SREC is transferred to the buyer, and the cost of the SREC, if any, is then recorded to energy generation and storage cost of revenue.

Nevada Tax Incentives

In connection with the construction of Gigafactory Nevada, we entered into agreements with the State of Nevada and Storey County in Nevada that provide abatements for specified taxes, discounts to the base tariff energy rates and transferable tax credits of up to $195 million in consideration of capital investment and hiring targets that were met at Gigafactory Nevada. These incentives are available until June 2024 or June 2034, depending on the incentive. As of December 31, 2021 and 2020, we had earned the maximum of $195 million of transferable tax credits under these agreements.

Gigafactory Texas Tax Incentives

In connection with the construction of Gigafactory Texas, we entered into a 20-year agreement with Travis County in Texas pursuant to which we would receive grant funding equal to 70-80% of property taxes paid by us to Travis County and a separate 10-year agreement with the Del Valle Independent School District in Texas pursuant to which a portion of the taxable value of our property would be capped at a specified amount, in each case subject to our meeting certain minimum economic development metrics through our construction and operations at Gigafactory Texas. As of December 31, 2021, we had not yet received any grant funding related to property taxes paid to Travis County.

Defined Contribution Plan

We have a 401(k) savings plan in the U.S. that is intended to qualify as a deferred salary arrangement under Section 401(k) of the Internal Revenue Code and a number of savings plans internationally. Under the 401(k) savings plan, participating employees may elect to contribute up to 90% of their eligible compensation, subject to certain limitations. We did not make any contributions to the 401(k) savings plan during the years ended December 31, 2021, 2020 and 2019 (other than employee deferrals of eligible compensation). Beginning in January 2022, we will match 50% of each employee's contributions up to a maximum of 6% (capped at $3,000) of the employee's eligible compensation, vested upon one year of service.

Recent Accounting Pronouncements

Recently issued accounting pronouncements not yet adopted

In October 2021, the FASB issued ASU No. 2021-08, Accounting for Contract Assets and Contract Liabilities from Contracts with Customers (Topic 805). This ASU requires an acquirer in a business combination to recognize and measure contract assets and contract liabilities (deferred revenue) from acquired contracts using the revenue recognition guidance in Topic 606. At the acquisition date, the acquirer applies the revenue model as if it had originated the acquired contracts. The ASU is effective for annual periods beginning after December 15, 2022, including interim periods within those fiscal years. Adoption of the ASU should be applied prospectively. Early adoption is also permitted, including adoption in an interim period. If early adopted, the amendments are applied retrospectively to all business combinations for which the acquisition date occurred during the fiscal year of adoption. This ASU is currently not expected to have a material impact on our consolidated financial statements.

In November 2021, the FASB issued ASU No. 2021-10, Government Assistance (Topic 832). This ASU requires business entities to disclose information about government assistance they receive if the transactions were accounted for by analogy to either a grant or a contribution accounting model. The disclosure requirements include the nature of the transaction and the related accounting policy used, the line items on the balance sheets and statements of operations that are affected and the amounts applicable to each financial statement line item and the significant terms and conditions of the transactions. The ASU is effective for annual periods beginning after December 15, 2021. The disclosure requirements can be applied either retrospectively or prospectively to all transactions in the scope of the amendments that are reflected in the financial statements at the date of initial application and new transactions that are entered into after the date of initial application. The ASU is currently not expected to have a material impact on our consolidated financial statements.

Recently adopted accounting pronouncements

In December 2019, the FASB issued ASU No. 2019-12, Simplifying the Accounting for Income Taxes, as part of its initiative to reduce complexity in accounting standards. The amendments in the ASU include removing exceptions to incremental intraperiod tax allocation of losses and gains from different financial statement components, exceptions to the method of recognizing income taxes on interim period losses, and exceptions to deferred tax liability recognition related to foreign subsidiary investments. In addition, the ASU requires that entities recognize franchise tax based on an incremental method and requires an entity to evaluate the accounting for step-ups in the tax basis of goodwill as inside or outside of a business combination. We adopted ASU 2019-12 starting 2021, which did not have a material impact on our consolidated financial statements.

In March 2020, the FASB issued ASU No. 2020-04, Facilitation of the Effects of Reference Rate Reform on Financial Reporting (Topic 848). The ASU provides optional expedients and exceptions for applying GAAP to transactions affected by reference rate (e.g., LIBOR) reform if certain criteria are met, for a limited period of time to ease the potential burden in accounting for (or recognizing the effects of) reference rate reform on financial reporting. The ASU is effective as of March 12, 2020 through December 31, 2022. We continue to evaluate transactions or contract modifications occurring as a result of reference rate reform and determine whether to apply the optional guidance on an ongoing basis. We adopted ASU 2020-04 during 2021. The ASU has not and is currently not expected to have a material impact on our consolidated financial statements.

In May 2021, the FASB issued ASU No. 2021-04, Issuer’s Accounting for Certain Modifications or Exchanges of Freestanding Equity-Classified Written Call Options. The ASU addresses the previous lack of specific guidance in the accounting standards codification related to modifications or exchanges of freestanding equity-classified written call options (such as warrants) by specifying the accounting for various modification scenarios. The ASU is effective for interim and annual periods beginning after December 15, 2021, with early adoption permitted for any periods after issuance to be applied as of the beginning of the fiscal year that includes the interim period. We adopted the ASU during 2021 as of the beginning of our fiscal year, which did not have a material impact on our consolidated financial statements.

ASU 2020-06

In August 2020, the FASB issued ASU 2020-06, Accounting for Convertible Instruments and Contracts in an Entity's Own Equity. The ASU simplifies the accounting for convertible instruments by removing certain separation models in ASC 470-20, Debt—Debt with Conversion and Other Options, for convertible instruments. The ASU updates the guidance on certain embedded conversion features that are not required to be accounted for as derivatives under Topic 815, Derivatives and Hedging, or that do not result in substantial premiums accounted for as paid-in capital, such that those features are no longer required to be separated from the host contract. The convertible debt instruments will be accounted for as a single liability measured at amortized cost. This will also result in the interest expense recognized for convertible debt instruments to be typically closer to the coupon interest rate when applying the guidance in Topic 835, Interest. Further, the ASU made amendments to the EPS guidance in Topic 260 for convertible debt instruments, the most significant impact of which is requiring the use of the if-converted method for diluted EPS calculation, and no longer allowing the net share settlement method. The ASU also made revisions to Topic 815-40, which provides guidance on how an entity must determine whether a contract qualifies for a scope exception from derivative accounting. The amendments to Topic 815-40 change the scope of contracts that are recognized as assets or liabilities. The ASU is effective for interim and annual periods beginning after December 15, 2021, with early adoption permitted for periods beginning after December 15, 2020. Adoption of the ASU can either be on a modified retrospective or full retrospective basis.

On January 1, 2021, we adopted the ASU using the modified retrospective method. We recognized a cumulative effect of initially applying the ASU as an adjustment to the January 1, 2021 opening balance of accumulated deficit. Due to the recombination of the equity conversion component of our convertible debt remaining outstanding, additional paid in capital and convertible senior notes (mezzanine equity) were reduced. The removal of the remaining debt discounts recorded for this previous separation had the effect of increasing our net debt balance and the reduction of property, plant and equipment was related to previously capitalized interest. The prior period consolidated financial statements have not been retrospectively adjusted and continue to be reported under the accounting standards in effect for those periods.

Accordingly, the cumulative effect of the changes made on our January 1, 2021 consolidated balance sheet for the adoption of the ASU was as follows (in millions):

	Balances at December 31, 2020	Adjustments from Adoption of ASU 2020-06	Balances at January 1, 2021
Assets			
Property, plant and equipment, net	$ 12,747	$ (45)	$ 12,702
Liabilities			
Current portion of debt and finance leases	2,132	50	2,182
Debt and finance leases, net of current portion	9,556	219	9,775
Mezzanine equity			
Convertible senior notes	51	(51)	—
Equity			
Additional paid-in capital	27,260	(474)	26,786
Accumulated deficit	(5,399)	211	(5,188)

The impact of adoption on our consolidated statements of operations for the year ended December 31, 2021 was primarily to decrease net interest expense by $204 million and to decrease depreciation expense by immaterial amounts. This had the effect of increasing our basic and diluted net income per share of common stock attributable to common stockholders by $0.22 and $0.20, respectively, for the year ended December 31, 2021. The change in methodology to determine the denominator used in the calculation of diluted net income per share of common stock attributable to common stockholders contributed less than $0.01 of the increase by requiring the use of the if-converted method as discussed above for the year ended December 31, 2021.

Note 3 – Digital Assets, Net

During the year ended December 31, 2021, we purchased and received $1.50 billion of bitcoin. During the year ended December 31, 2021, we recorded $101 million of impairment losses on such digital assets. We also realized gains of $128 million in connection with selling a portion of our holdings in March 2021. Such gains are presented net of impairment losses in Restructuring and other in the consolidated statement of operations. As of December 31, 2021, the carrying value of our digital assets held was $1.26

billion, which reflects cumulative impairments of $101 million. The fair market value of such digital assets held as of December 31, 2021 was $1.99 billion.

Note 4 – Goodwill and Intangible Assets

Goodwill decreased $7 million within the automotive segment from $207 million as of December 31, 2020 to $200 million as of December 31, 2021. There were no accumulated impairment losses as of December 31, 2021 and 2020.

Information regarding our intangible assets including assets recognized from our acquisitions was as follows (in millions):

	December 31, 2021				December 31, 2020			
	Gross Carrying Amount	Accumulated Amortization	Other	Net Carrying Amount	Gross Carrying Amount	Accumulated Amortization	Other	Net Carrying Amount
Finite-lived intangible assets:								
Developed technology	$ 299	$ (150)	$ 3	$ 152	$ 302	$ (111)	$ 3	$ 194
Trade names	2	(1)	—	1	3	(1)	—	2
Favorable contracts and leases, net	113	(40)	—	73	113	(32)	—	81
Other	36	(21)	1	16	38	(18)	1	21
Total finite-lived intangible assets	450	(212)	4	242	456	(162)	4	298
Indefinite-lived intangible assets:								
Gigafactory Nevada water rights	15	—	—	15	15	—	—	15
Total intangible assets	$ 465	$ (212)	$ 4	$ 257	$ 471	$ (162)	$ 4	$ 313

Amortization expense during the years ended December 31, 2021, 2020 and 2019 was $51 million, $51 million and $44 million, respectively.

Total future amortization expense for finite-lived intangible assets was estimated as follows (in millions):

2022	$ 49
2023	43
2024	28
2025	28
2026	28
Thereafter	66
Total	$ 242

Note 5 – Fair Value of Financial Instruments

ASC 820*, Fair Value Measurements*, states that fair value is an exit price, representing the amount that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants. As such, fair value is a market-based measurement that should be determined based on assumptions that market participants would use in pricing an asset or a liability. The three-tiered fair value hierarchy, which prioritizes which inputs should be used in measuring fair value, is comprised of: (Level I) observable inputs such as quoted prices in active markets; (Level II) inputs other than quoted prices in active markets that are observable either directly or indirectly and (Level III) unobservable inputs for which there is little or no market data. The fair value hierarchy requires the use of observable market data when available in determining fair value. Our assets and liabilities that were measured at fair value on a recurring basis were as follows (in millions):

	December 31, 2021				December 31, 2020			
	Fair Value	Level I	Level II	Level III	Fair Value	Level I	Level II	Level III
Money market funds (cash and cash equivalents)	$ 9,548	$ 9,548	$ —	$ —	$ 13,847	$ 13,847	$ —	$ —

Corporate debt securities (short-term marketable securities)	131	—	131	—	—	—	—	—
Interest rate swap liabilities	31	—	31	—	58	—	58	—
Total	$ 9,710	$ 9,548	$ 162	$ —	$ 13,905	$ 13,847	$ 58	$ —

All of our money market funds were classified within Level I of the fair value hierarchy because they were valued using quoted prices in active markets. Our marketable securities are classified within Level II of the fair value hierarchy and the market approach was used to determine fair value of these investments. Our interest rate swaps were classified within Level II of the fair value hierarchy because they were valued using alternative pricing sources or models that utilized market observable inputs, including current and forward interest rates.

Interest Rate Swaps

We enter into fixed-for-floating interest rate swap agreements to swap variable interest payments on certain debt for fixed interest payments, as required by certain of our lenders. We do not designate our interest rate swaps as hedging instruments. Accordingly, our interest rate swaps are recorded at fair value on the consolidated balance sheets within Other non-current assets or Other long-term liabilities, with any changes in their fair values recognized as Other income (expense), net, in the consolidated statements of operations and with any cash flows recognized as operating activities in the consolidated statements of cash flows. Our interest rate swaps outstanding were as follows (in millions):

	December 31, 2021			December 31, 2020		
	Aggregate Notional Amount	Gross Asset at Fair Value	Gross Liability at Fair Value	Aggregate Notional Amount	Gross Asset at Fair Value	Gross Liability at Fair Value
Interest rate swaps	$ 312	$ —	$ 31	$ 554	$ —	$ 58

Our interest rate swaps activity was as follows (in millions):

	Year Ended December 31,		
	2021	2020	2019
Gross losses	$ 9	$ 42	$ 51
Gross gains	$ 22	$ 6	$ 11

Disclosure of Fair Values

Our financial instruments that are not re-measured at fair value include accounts receivable, MyPower customer notes receivable, accounts payable, accrued liabilities, customer deposits and debt. The carrying values of these financial instruments approximate their fair values, other than our 1.25% Convertible Senior Notes due in 2021 ("2021 Notes"), 2.375% Convertible Senior Notes due in 2022 ("2022 Notes"), 2024 Notes and our subsidiary's 5.50% Convertible Senior Notes due in 2022 (collectively referred to as "Convertible Senior Notes" below), 5.30% Senior Notes due in 2025 ("2025 Notes"), Solar Asset and Loan-backed Notes.

We estimate the fair value of the Convertible Senior Notes and the 2025 Notes using commonly accepted valuation methodologies and market-based risk measurements that are indirectly observable, such as credit risk (Level II). In addition, we estimate the fair values of our Solar Asset and Loan-backed Notes based on rates currently offered for instruments with similar maturities and terms (Level III). The following table presents the estimated fair values and the carrying values (in millions):

	December 31, 2021		December 31, 2020	
	Carrying Value	Fair Value	Carrying Value	Fair Value
Convertible Senior Notes (1)	$ 119	$ 2,016	$ 1,971	$ 24,596
2025 Notes (1)	$ —	$ —	$ 1,785	$ 1,877
Solar Asset and Loan-backed Notes	$ 827	$ 834	$ 1,261	$ 1,289

(1) The 2021 Notes, our subsidiary's 5.50% Convertible Senior Notes due in 2022 and the 2025 Notes were fully settled in 2021.

Note 6 – Inventory

Our inventory consisted of the following (in millions):

	December 31, 2021	December 31, 2020
Raw materials	$ 2,816	$ 1,508
Work in process	1,089	493

Finished goods (1)	1,277	1,666
Service parts	575	434
Total	$ 5,757	$ 4,101

(1) Finished goods inventory includes vehicles in transit to fulfill customer orders, new vehicles available for sale, used vehicles, energy storage products and Solar Roof products available for sale.

For solar energy systems, we commence transferring component parts from inventory to construction in progress, a component of solar energy systems, once a lease or PPA contract with a customer has been executed and installation has been initiated. Additional costs incurred on the leased solar energy systems, including labor and overhead, are recorded within solar energy systems under construction.

We write-down inventory for any excess or obsolete inventories or when we believe that the net realizable value of inventories is less than the carrying value. During the years ended December 31, 2021, 2020, and 2019, we recorded write-downs of $106 million, $145 million and $138 million, respectively, in Cost of revenues in the consolidated statements of operations.

Note 7 – Solar Energy Systems, Net

Our solar energy systems, net, consisted of the following (in millions):

	December 31, 2021	December 31, 2020
Solar energy systems in service	$ 6,809	$ 6,758
Initial direct costs related to customer solar energy system lease acquisition costs	104	103
	6,913	6,861
Less: accumulated depreciation and amortization (1)	(1,187)	(955)
	5,726	5,906
Solar energy systems under construction	18	28
Solar energy systems pending interconnection	21	45
Solar energy systems, net (2) (3)	$ 5,765	$ 5,979

(1) Depreciation and amortization expense during the years ended December 31, 2021, 2020 and 2019 was $236 million, $232 million and $227 million, respectively.

(2) As of December 31, 2021 and 2020, solar energy systems, net, included $36 million of gross finance leased assets with accumulated depreciation and amortization of $9 million and $7 million, respectively.

(3) As of December 31, 2021 and 2020, there were $1.02 billion and $1.05 billion, respectively, of gross solar energy systems under lease pass-through fund arrangements with accumulated depreciation of $165 million and $137 million, respectively.

Note 8 – Property, Plant and Equipment, Net

Our property, plant and equipment, net, consisted of the following (in millions):

	December 31, 2021	December 31, 2020
Machinery, equipment, vehicles and office furniture	$ 9,953	$ 8,493
Tooling	2,188	1,811
Leasehold improvements	1,826	1,421
Land and buildings	4,675	3,662
Computer equipment, hardware and software	1,414	856
Construction in progress	5,559	1,621
	25,615	17,864
Less: Accumulated depreciation	(6,731)	(5,117)
Total	$ 18,884	$ 12,747

Construction in progress is primarily comprised of construction of Gigafactory Berlin and Gigafactory Texas, expansion of Gigafactory Shanghai and equipment and

tooling related to the manufacturing of our products. We are currently constructing Gigafactory Berlin under conditional permits in anticipation of being granted final permits. Completed assets are transferred to their respective asset classes and depreciation begins when an asset is ready for its intended use. Interest on outstanding debt is capitalized during periods of significant capital asset construction and amortized over the useful lives of the related assets. During the years ended December 31, 2021, 2020 and 2019, we capitalized interest of $53 million, $48 million and $31 million, respectively.

Depreciation expense during the years ended December 31, 2021, 2020 and 2019 was $1.91 billion, $1.57 billion and $1.37 billion, respectively. Gross property, plant and equipment under finance leases as of December 31, 2021 and 2020 was $2.75 billion and $2.28 billion, respectively, with accumulated depreciation of $1.21 billion and $816 million, respectively.

Panasonic has partnered with us on Gigafactory Nevada with investments in the production equipment that it uses to manufacture and supply us with battery cells. Under our arrangement with Panasonic, we plan to purchase the full output from their production equipment at negotiated prices. As the terms of the arrangement convey a finance lease under ASC 842, *Leases*, we account for their production equipment as leased assets when production commences. We account for each lease and any non-lease components associated with that lease as a single lease component for all asset classes, except production equipment classes embedded in supply agreements. This results in us recording the cost of their production equipment within Property, plant and equipment, net, on the consolidated balance sheets with a corresponding liability recorded to debt and finance leases. Depreciation on Panasonic production equipment is computed using the units-of-production method whereby capitalized costs are amortized over the total estimated productive life of the respective assets. As of December 31, 2021 and 2020, we had cumulatively capitalized gross costs of $1.98 billion and $1.77 billion, respectively, on the consolidated balance sheets in relation to the production equipment under our Panasonic arrangement.

During the years ended December 31, 2021, 2020 and 2019, we received cash incentives of $6 million, $123 million and $46 million, respectively, from the Shanghai government in connection with us making certain manufacturing equipment investments at Gigafactory Shanghai. These incentives were taken as a reduction to Property, plant and equipment, net, on the consolidated balance sheets and cash receipts were reflected as investing cash inflows on the consolidated statements of cash flows.

Note 9 – Accrued Liabilities and Other

Our accrued liabilities and other current liabilities consisted of the following (in millions):

	December 31, 2021	December 31, 2020
Accrued purchases (1)	$ 2,045	$ 901
Taxes payable (2)	1,122	777
Payroll and related costs	906	654
Accrued warranty reserve, current portion	703	479
Sales return reserve, current portion	265	417
Operating lease liabilities, current portion	368	286
Accrued interest	16	77
Other current liabilities	294	264
Total	$ 5,719	$ 3,855

(1) Accrued purchases primarily reflects receipts of goods and services that we had not been invoiced yet. As we are invoiced for these goods and services, this balance will reduce and accounts payable will increase. For the year ended December 31, 2021, accrued purchases increased as we continued construction and expansion of our facilities and operations.

(2) Taxes payable includes value added tax, sales tax, property tax, use tax and income tax payables.

Note 10 – Other Long-Term Liabilities

Our other long-term liabilities consisted of the following (in millions):

	December 31, 2021	December 31, 2020
Operating lease liabilities	$ 1,671	$ 1,254
Accrued warranty reserve	1,398	989
Sales return reserve	133	500
Deferred tax liability	24	151

Other non-current liabilities	320	436
Total other long-term liabilities	$ 3,546	$ 3,330

Note 11 – Debt

The following is a summary of our debt and finance leases as of December 31, 2021 (in millions):

	Net Carrying Value		Unpaid Principal Balance	Unused Committed Amount (1)	Contractual Interest Rates	Contractual Maturity Date
	Current	Long-Term				
Recourse debt:						
2022 Notes	$ 29	$ —	$ 29	$ —	2.375 %	March 2022
2024 Notes	1	89	91	—	2.00 %	May 2024
Credit Agreement	—	1,250	1,250	920	3.3 %	July 2023
Solar Bonds	0	7	7	—	4.0-5.8 %	January 2022 - January 2031
Total recourse debt	30	1,346	1,377	920		
Non-recourse debt:						
Automotive Asset-backed Notes	1,007	1,706	2,723	—	0.1%-5.5 %	September 2022-September 2025
Solar Asset and Loan-backed Notes	27	800	844	—	2.9%-7.7 %	September 2024-September 2049
Cash Equity Debt	24	388	422	—	5.3-5.8 %	July 2033-January 2035
Automotive Lease-backed Credit Facilities	—	—	—	167	Not applicable	September 2023
Other Loans	—	14	14	21	5.1 %	February 2033
Total non-recourse debt	1,058	2,908	4,003	188		
Total debt	1,088	4,254	$ 5,380	$ 1,108		
Finance leases	501	991				
Total debt and finance leases	$ 1,589	$ 5,245				

The following is a summary of our debt and finance leases as of December 31, 2020 (in millions):

	Net Carrying Value		Unpaid Principal Balance	Unused Committed Amount (1)	Contractual Interest Rates	Contractual Maturity Date
	Current	Long-Term				
Recourse debt:						
2021 Notes	$ 419	$ —	$ 422	$ —	1.25 %	March 2021
2022 Notes	115	366	503	—	2.375 %	March 2022
2024 Notes	171	856	1,282	—	2.00 %	May 2024
2025 Notes	—	1,785	1,800	—	5.30 %	August 2025
Credit Agreement	—	1,895	1,895	278	3.3 %	July 2023
Solar Bonds and other Loans	4	49	55	—	3.6%-5.8 %	January 2021 - January 2031
Total recourse debt	709	4,951	5,957	278		
Non-recourse debt:						
Automotive Asset-backed Notes	777	921	1,705	—	0.6%-7.9 %	August 2021-August 2024
Solar Asset and Loan-backed Notes	52	1,209	1,293	—	3.0%-7.7 %	September 2024-September 2049
China Loan Agreements	—	616	616	1,372	4.0 %	June 2021-December 2024
Cash Equity Debt	18	408	439	—	5.3%-5.8 %	July 2033-January 2035
Warehouse Agreement	37	257	294	806	1.7%-1.8 %	September 2022
Solar Term Loan	151	—	151	—	3.7 %	January 2021
Automotive Lease-backed Credit Facility	14	19	33	153	1.9%-5.9 %	September 2022-November 2022
Solar Revolving Credit Facility and other Loans	—	81	81	23	2.7%-5.1 %	June 2022-February 2033
Total non-recourse debt	1,049	3,511	4,612	2,354		
Total debt	1,758	8,462	$ 10,569	$ 2,632		
Finance leases	374	1,094				
Total debt and finance leases	$ 2,132	$ 9,556				

(1) There are no restrictions on draw-down or use for general corporate purposes with respect to any available committed funds under our credit facilities, except certain

specified conditions prior to draw-down, including pledging to our lenders sufficient amounts of qualified receivables, inventories, leased vehicles and our interests in those leases, solar energy systems and the associated customer contracts or various other assets and as may be described below.

Recourse debt refers to debt that is recourse to our general assets. Non-recourse debt refers to debt that is recourse to only assets of our subsidiaries. The differences between the unpaid principal balances and the net carrying values are due to debt discounts or deferred financing costs. On January 1, 2021, we adopted ASU 2020-06 using the modified retrospective method. As a result of this adoption, we have de-recognized the remaining debt discounts on the 2021, 2022 and 2024 Notes and therefore no longer recognized any amortization of debt discounts as interest expense (see Note 2, *Summary of Significant Accounting Policies*). As of December 31, 2021, we were in material compliance with all financial debt covenants.

2021 Notes, Bond Hedges and Warrant Transactions

During the first quarter of 2021, the remaining $422 million in aggregate principal amount of the 2021 Notes was settled in cash for the par amount and 5.3 million shares of our common stock were issued for the applicable conversion premium. The note hedges we entered into in connection with the issuance of the 2021 Notes were automatically settled with the respective conversions of the 2021 Notes, resulting in the receipt of 5.3 million shares of our common stock during the same period. Additionally, during the second and third quarters of 2021, we fully settled the warrants entered into in connection with the issuance of the 2021 Notes, resulting in the issuance of 15.8 million shares of our common stock.

2022 Notes, Bond Hedges and Warrant Transactions

In March 2017, we issued $978 million in aggregate principal amount of our 2022 Notes in a public offering. The net proceeds from the issuance, after deducting transaction costs, were $966 million.

Each $1,000 of principal of the 2022 Notes is convertible into 15.2670 shares of our common stock, which is equivalent to a conversion price of $65.50 per share, subject to adjustment upon the occurrence of specified events. As of December 31, 2021, holders of the 2022 Notes have the option to convert. Such holders also had the option to convert in each quarter in 2021 due to the closing price of our common stock exceeding 130% of the applicable conversion price on at least 20 of the last 30 consecutive trading days of the prior applicable quarter. We have elected to settle the principal in cash and the conversion premium in net shares upon a conversion. If a fundamental change occurs prior to the maturity date, holders of the 2022 Notes may require us to repurchase all or a portion of their 2022 Notes for cash at a repurchase price equal to 100% of the principal amount plus any accrued and unpaid interest. In addition, if specific corporate events occur prior to the maturity date, we would increase the conversion rate for a holder who elects to convert its 2022 Notes in connection with such an event in certain circumstances.

In accordance with GAAP relating to embedded conversion features, we initially valued and bifurcated the conversion feature associated with the 2022 Notes. We recorded to stockholders' equity $146 million for the conversion feature. The resulting debt discount was being amortized to interest expense at an effective interest rate of 6.00%, which is no longer applicable under ASU 2020-06.

In connection with the offering of the 2022 Notes, we entered into convertible note hedge transactions whereby we had the option to purchase 14.9 million shares of our common stock at a price of $65.50 per share. The cost of the convertible note hedge transactions was $204 million. In addition, we sold warrants whereby the holders of the warrants have the option to purchase 14.9 million shares of our common stock at a price of $131.00 per share. We received $53 million in cash proceeds from the sale of these warrants. Taken together, the purchase of the convertible note hedges and the sale of the warrants are intended to reduce potential dilution from the conversion of the 2022 Notes and to effectively increase the overall conversion price from $65.50 to $131.00 per share. As these transactions meet certain accounting criteria, the convertible note hedges and warrants are recorded in stockholders' equity and are not accounted for as derivatives. The net cost incurred in connection with the convertible note hedge and warrant transactions was recorded as a reduction to additional paid-in capital on the consolidated balance sheet.

During the year ended December 31, 2021, $474 million in aggregate principal amount of the 2022 Notes was early converted and settled in cash for the par amount and 6.5 million shares of our common stock were issued for the applicable conversion premium. The note hedges we entered into in connection with the issuance of the 2022 Notes were automatically settled with the respective conversions of the 2022 Notes, resulting in the receipt of 6.5 million shares of our common stock during the same period. The related warrants will settle under their terms after the maturity or settlement of the 2022 Notes. As of December 31, 2021, the if-converted value of the notes exceeds the outstanding principal amount by $439 million.

2024 Notes, Bond Hedges and Warrant Transactions

In May 2019, we issued $1.84 billion in aggregate principal amount of our 2024 Notes in a public offering. The net proceeds from the issuance, after deducting transaction costs, were $1.82 billion.

Each $1,000 of principal of the 2024 Notes is convertible into 16.1380 shares of our common stock, which is equivalent to a conversion price of $61.97 per share, subject to adjustment upon the occurrence of specified events. Holders of the 2024 Notes may convert, at their option, on or after February 15, 2024. Further, holders of the 2024 Notes may convert, at their option, prior to February 15, 2024 only under the following circumstances: (1) during any calendar quarter commencing after September 30, 2019 (and only during such calendar quarter), if the last reported sale price of our common stock for at least 20 trading days (whether or not consecutive) during a period of 30 consecutive trading days ending on the last trading day of immediately preceding calendar quarter is greater than or equal to 130% of the conversion price on each trading day; (2) during the five-business day period after any five-consecutive trading day period in which the trading price per $1,000 principal amount of the 2024 Notes for each trading day of such period is less than 98% of the product of the last reported sale price of our common stock and the conversion rate on each such trading day, or (3) if specified corporate events occur. Upon conversion, the 2024 Notes will be settled in cash, shares of our common stock or a combination thereof, at our election. If a fundamental change occurs prior to the maturity date, holders of the 2024 Notes may require us to repurchase all or a portion of their 2024 Notes for cash at a repurchase price equal to 100% of the principal amount plus any accrued and unpaid interest. In addition, if specific corporate events occur prior to the maturity date, we would increase the conversion rate for a holder who elects to convert its 2024 Notes in connection with such an event in certain circumstances. Early conversion of notes which are scheduled to settle in the following quarter are classified as current on our consolidated balance sheets.

In accordance with GAAP relating to embedded conversion features, we initially valued and bifurcated the conversion feature associated with the 2024 Notes. We recorded to stockholders' equity $491 million for the conversion feature. The resulting debt discount was being amortized to interest expense at an effective interest rate of 8.68%, which is no longer applicable under ASU 2020-06.

In connection with the offering of the 2024 Notes, we entered into convertible note hedge transactions whereby we had the option to purchase 29.7 million shares of our common stock at a price of $61.97 per share. The cost of the convertible note hedge transactions was $476 million. In addition, we sold warrants whereby the holders of the warrants have the option to purchase 29.7 million shares of our common stock at a price of $121.50 per share. We received $174 million in cash proceeds from the sale of these warrants. Taken together, the purchase of the convertible note hedges and the sale of the warrants are intended to reduce potential dilution from the conversion of the 2024 Notes and to effectively increase the overall conversion price from $61.97 to $121.50 per share. As these transactions meet certain accounting criteria, the convertible note hedges and warrants are recorded in stockholders' equity and are not accounted for as derivatives. The net cost incurred in connection with the convertible note hedge and warrant transactions was recorded as a reduction to additional paid-in capital on the consolidated balance sheet.

The closing price of our common stock exceeded 130% of the applicable conversion price on at least 20 of the last 30 consecutive trading days of each quarter in 2021, causing the 2024 Notes to be convertible by their holders in the subsequent quarter. During the year ended December 31, 2021, $1.19 billion in aggregate principal amount of the 2024 Notes was early converted and settled in cash for the par amount and 17.6 million shares of our common stock were issued for the applicable conversion premium. The note hedges we entered into in connection with the issuance of the 2024 Notes were automatically settled with the respective conversions of the 2024 Notes, resulting in the receipt of 17.6 million shares of our common stock during the same period. Additionally, during the year ended December 31, 2021, we partially settled the warrants entered into in connection with the issuance of the 2024 Notes, resulting in the issuance of 21.4 million shares of our common stock. As of December 31, 2021, the if-converted value of the notes exceeds the outstanding principal amount by $1.46 billion.

2025 Notes

In August 2017, we issued $1.80 billion in aggregate principal amount of the 2025 Notes pursuant to Rule 144A and Regulation S under the Securities Act. The net proceeds from the issuance, after deducting transaction costs, were $1.77 billion. During the year ended December 31, 2021, we fully repaid the $1.80 billion in aggregate principal of the 2025 Notes and recorded an extinguishment of debt charge of $60 million related to the redemption in Interest expense in the consolidated statement of operations.

Credit Agreement

In June 2015, we entered into a senior asset-based revolving credit agreement (as amended from time to time, the "Credit Agreement") with a syndicate of banks. Borrowed funds bear interest, at our option, at an annual rate of (a) 1% plus LIBOR or (b) the highest of (i) the federal funds rate plus 0.50%, (ii) the lenders' "prime rate" or (iii) 1% plus LIBOR. The fee for undrawn amounts is 0.25% per annum. The Credit Agreement is secured by certain of our accounts receivable, inventory and equipment.

Availability under the Credit Agreement is based on the value of such assets, as reduced by certain reserves.

Automotive Asset-backed Notes

From time to time, we transfer receivables or beneficial interests related to certain leased vehicles into special purpose entities ("SPEs") and issue Automotive Asset-backed Notes, backed by these automotive assets to investors. The SPEs are consolidated in the financial statements. The cash flows generated by these automotive assets are used to service the principal and interest payments on the Automotive Asset-backed Notes and satisfy the SPEs' expenses, and any remaining cash is distributed to the owners of the SPEs. We recognize revenue earned from the associated customer lease contracts in accordance with our revenue recognition policy. The SPEs' assets and cash flows are not available to our other creditors, and the creditors of the SPEs, including the Automotive Asset-backed Note holders, have no recourse to our other assets.

During the year ended December 31, 2021, we transferred beneficial interests related to certain leased vehicles into SPEs and issued $1.98 billion in aggregate principal amount of Automotive Asset-backed Notes, with terms similar to our other, previously issued, Automotive Asset-backed Notes. The proceeds from the issuances, net of discounts and fees, were $1.97 billion.

Solar Asset and Loan-backed Notes

Our subsidiaries pooled and transferred qualifying solar energy systems and the associated customer contracts, our interests in certain financing funds or certain MyPower customer notes receivable into SPEs and issued Solar Asset and Loan-backed Notes backed by these solar assets, interests to investors or MyPower customer notes receivable. The SPEs are wholly owned by us and are consolidated in the financial statements. The cash flows generated by these solar assets and notes receivable, or distributed by the underlying financing funds to certain SPEs are used to service the principal and interest payments on the Solar Asset and Loan-backed Notes and satisfy the SPEs' expenses, and any remaining cash is distributed to us. The SPEs' assets and cash flows are not available to our other creditors, and the creditors of the SPEs, including the Solar Asset and Loan-backed Note holders, have no recourse to our other assets. We contracted with certain SPEs to provide operations & maintenance and administrative services for the solar energy systems. As of December 31, 2021, solar assets pledged as collateral for Solar Asset and Loan-backed Notes had a carrying value of $257 million and are included within Solar energy systems, net, on the consolidated balance sheet.

During the year ended December 31, 2021, we early repaid $374 million in aggregate principal of the Solar Asset and Loan-backed Notes and recorded an extinguishment of debt charge of $16 million related to the early repayments in Interest expense in the consolidated statement of operations.

China Loan Agreements

In December 2019, one of our subsidiaries entered into loan agreements with a syndicate of lenders in China for a secured term loan facility of up to RMB 9.0 billion or the equivalent amount drawn in U.S. dollars (the "Fixed Asset Facility") to be used in connection with our construction of our Gigafactory Shanghai. Outstanding borrowings pursuant to the Fixed Asset Facility accrued interest at a rate equal to: (i) for RMB-denominated loans, the market quoted interest rate published by the People's Bank of China minus 0.7625%, and (ii) for U.S. dollar-denominated loans, the sum of one-year LIBOR plus 1.3%. The Fixed Asset Facility was secured by certain real property relating to Gigafactory Shanghai and is non-recourse to our other assets. During the year ended December 31, 2021, we fully repaid the $614 million in aggregate principal of the Fixed Asset Facility and the facility was terminated.

In May 2020, one of our subsidiaries entered into an additional Working Capital Loan Contract (the "2020 China Working Capital Facility") with a lender in China for an unsecured revolving facility of up to RMB 4.00 billion (or the equivalent amount drawn in U.S. dollars), to be used for expenditures related to production at our Gigafactory Shanghai. Borrowed funds bear interest at an annual rate of: (i) for RMB-denominated loans, the market quoted interest rate published by an authority designated by the People's Bank of China minus 0.35%, (ii) for U.S. dollar-denominated loans, the sum of one-year LIBOR plus 0.8%. The 2020 China Working Capital Facility is non-recourse to our assets. During the year ended December 31, 2021, the 2020 China Working Capital Facility matured and the facility was terminated.

Cash Equity Debt

In connection with the cash equity financing deals closed in 2016, our subsidiaries issued $502 million in aggregate principal amount of debt that bears interest at fixed rates. This debt is secured by, among other things, our interests in certain financing funds and is non-recourse to our other assets.

Warehouse Agreement

In August 2016, our subsidiaries entered into a loan and security agreement (as amended from time to time, the "Warehouse Agreement") for borrowings secured by the future cash flows arising from certain leases and the associated leased vehicles. Amounts drawn under the Warehouse Agreement generally bore interest at a fixed margin above (i) LIBOR or (ii) the commercial paper rate. The Warehouse Agreement was non-recourse to our other assets.

During the year ended December 31, 2021, we repaid the remaining outstanding balance of the Warehouse Agreement and terminated the facility.

Solar Term Loan

Our subsidiaries had entered into agreements for term loans with various financial institutions. The term loans were secured by substantially all of the assets of the subsidiaries, including its interests in certain financing funds, and were non-recourse to our other assets.

During the year ended December 31, 2021, the remaining Solar Term Loan matured and was repaid.

Automotive Lease-backed Credit Facilities

Our subsidiaries have entered into various credit agreements for borrowings secured by our interests in certain vehicle leases. These facilities are non-recourse to our other assets. During the year ended December 31, 2021, we fully repaid $32 million in aggregate principal of our Automotive Lease-backed Credit Facilities and terminated one of the facilities.

Solar Revolving Credit Facility and other Loans

Our subsidiaries entered into various solar revolving credit facility and other loan agreements with various financial institutions. The solar revolving credit facility was secured by certain assets of the subsidiary and is non-recourse to our other assets. During the year ended December 31, 2021, we fully repaid the $67 million in aggregate principal of the remaining Solar Revolving Credit Facility and the facility was terminated.

Interest Expense

The following table presents the interest expense related to the contractual interest coupon, the amortization of debt issuance costs and the amortization of debt discounts on our convertible senior notes with cash conversion features, which include the 2021 Notes, the 2022 Notes and the 2024 Notes (in millions):

	Year Ended December 31,		
	2021	2020	2019
Contractual interest coupon	$ 12	$ 73	$ 65
Amortization of debt issuance costs	5	7	7
Amortization of debt discounts (1)	—	173	148
Losses on extinguishment of debt (1)	—	105	—
Total	$ 17	$ 358	$ 220

(1) Under the modified retrospective method of adoption of ASU 2020-06, there was neither amortization of debt discounts, nor losses on extinguishment of debt recognized for the year ended December 31, 2021. Refer to discussion above for further details.

Pledged Assets

As of December 31, 2021 and 2020, we had pledged or restricted $5.25 billion and $6.04 billion of our assets (consisting principally of restricted cash, receivables, inventory, SRECs, solar energy systems, operating lease vehicles, land use rights, property and equipment and equity interests in certain SPEs) as collateral for our outstanding debt.

Schedule of Principal Maturities of Debt

The future scheduled principal maturities of debt as of December 31, 2021 were as follows (in millions):

	Recourse debt	Non-recourse debt	Total
2022	$ 30	$ 1,065	$ 1,095
2023	1,250	1,206	2,456
2024	90	970	1,060
2025	4	174	178
2026	—	64	64
Thereafter	3	524	527
Total	$ 1,377	$ 4,003	$ 5,380

Note 12 – Leases

We have entered into various operating and finance lease agreements for certain of our offices, manufacturing and warehouse facilities, retail and service locations, equipment, vehicles, and solar energy systems, worldwide. We determine if an arrangement is a lease, or contains a lease, at inception and record the leases in our financial statements upon lease commencement, which is the date when the underlying asset is made available for use by the lessor.

We have lease agreements with lease and non-lease components, and have elected to utilize the practical expedient to account for lease and non-lease components together as a single combined lease component, from both a lessee and lessor perspective with the exception of direct sales-type leases and production equipment classes embedded in supply agreements. From a lessor perspective, the timing and pattern of transfer are the same for the non-lease components and associated lease component and, the lease component, if accounted for separately, would be classified as an operating lease.

We have elected not to present short-term leases on the consolidated balance sheet as these leases have a lease term of 12 months or less at lease inception and do not contain purchase options or renewal terms that we are reasonably certain to exercise. All other lease assets and lease liabilities are recognized based on the present value of lease payments over the lease term at commencement date. Because most of our leases do not provide an implicit rate of return, we used our incremental borrowing rate based on the information available at lease commencement date in determining the present value of lease payments.

Our leases, where we are the lessee, often include options to extend the lease term for up to 10 years. Some of our leases also include options to terminate the lease prior to the end of the agreed upon lease term. For purposes of calculating lease liabilities, lease terms include options to extend or terminate the lease when it is reasonably certain that we will exercise such options.

Lease expense for operating leases is recognized on a straight-line basis over the lease term as cost of revenues or operating expenses depending on the nature of the leased asset. Certain operating leases provide for annual increases to lease payments based on an index or rate. We calculate the present value of future lease payments based on the index or rate at the lease commencement date for new leases commencing after January 1, 2019. For historical leases, we used the index or rate as of January 1, 2019. Differences between the calculated lease payment and actual payment are expensed as incurred. Amortization of finance lease assets is recognized over the lease term as cost of revenues or operating expenses depending on the nature of the leased asset. Interest expense on finance lease liabilities is recognized over the lease term in interest expense.

The balances for the operating and finance leases where we are the lessee are presented as follows (in millions) within our consolidated balance sheets:

	December 31, 2021	December 31, 2020
Operating leases:		
Operating lease right-of-use assets	$ 2,016	$ 1,558
Accrued liabilities and other	$ 368	$ 286
Other long-term liabilities	1,671	1,254
Total operating lease liabilities	$ 2,039	$ 1,540
Finance leases:		
Solar energy systems, net	$ 27	$ 29
Property, plant and equipment, net	1,536	1,465
Total finance lease assets	$ 1,563	$ 1,494
Current portion of long-term debt and finance leases	$ 501	$ 374
Long-term debt and finance leases, net of current portion	991	1,094
Total finance lease liabilities	$ 1,492	$ 1,468

The components of lease expense are as follows (in millions) within our consolidated statements of operations:

	Year Ended December 31,		
	2021	2020	2019
Operating lease expense:			
Operating lease expense (1)	$ 627	$ 451	$ 426
Finance lease expense:			
Amortization of leased assets	$ 415	$ 348	$ 299
Interest on lease liabilities	89	100	104
Total finance lease expense	$ 504	$ 448	$ 403
Total lease expense	$ 1,131	$ 899	$ 829

(1) Includes short-term leases and variable lease costs, which are immaterial.

Other information related to leases where we are the lessee is as follows:

	December 31, 2021	December 31, 2020
Weighted-average remaining lease term:		
Operating leases	6.5 years	6.2 years
Finance leases	4.2 years	4.9 years
Weighted-average discount rate:		
Operating leases	5.0%	5.8%
Finance leases	5.8%	6.5%

Supplemental cash flow information related to leases where we are the lessee is as follows (in millions):

	Year Ended December 31,		
	2021	2020	2019
Cash paid for amounts included in the measurement of lease liabilities:			
Operating cash outflows from operating leases	$ 616	$ 456	$ 396
Operating cash outflows from finance leases (interest payments)	$ 89	$ 100	$ 104
Financing cash outflows from finance leases	$ 439	$ 338	$ 321
Leased assets obtained in exchange for finance lease liabilities	$ 486	$ 188	$ 616
Leased assets obtained in exchange for operating lease liabilities	$ 818	$ 553	$ 202

As of December 31, 2021, the maturities of our operating and finance lease liabilities (excluding short-term leases) are as follows (in millions):

	Operating Leases	Finance Leases
2022	$ 458	$ 587
2023	412	524

2024	366	381
2025	319	102
2026	232	45
Thereafter	595	9
Total minimum lease payments	2,382	1,648
Less: Interest	343	156
Present value of lease obligations	2,039	1,492
Less: Current portion	368	501
Long-term portion of lease obligations	$ 1,671	$ 991

Operating Lease and Sales-type Lease Receivables

We are the lessor of certain vehicle and solar energy system arrangements as described in Note 2, *Summary of Significant Accounting Policies*. As of December 31, 2021, maturities of our operating lease and sales-type lease receivables from customers for each of the next five years and thereafter were as follows (in millions):

	Operating Leases	Sales-type Leases
2022	$ 1,024	$ 91
2023	779	91
2024	458	100
2025	218	95
2026	192	39
Thereafter	1,906	11
Gross lease receivables	$ 4,577	$ 427

The above table does not include vehicle sales to customers or leasing partners with a resale value guarantee as the cash payments were received upfront. For our solar PPA arrangements, customers are charged solely based on actual power produced by the installed solar energy system at a predefined rate per kilowatt-hour of power produced. The future payments from such arrangements are not included in the above table as they are a function of the power generated by the related solar energy systems in the future.

Net Investment in Sales-type Leases

Net investment in sales-type leases, which is the sum of the present value of the future contractual lease payments, is presented on the consolidated balance sheets as a component of Prepaid expenses and other current assets for the current portion and as Other non-current assets for the long-term portion. Lease receivables relating to sales-type leases are presented on the consolidated balance sheets as follows (in millions):

	December 31, 2021	December 31, 2020
Gross lease receivables	$ 427	$ 102
Unearned interest income	(50)	(11)
Allowance for expected credit losses	(1)	—
Net investment in sales-type leases	$ 376	$ 91
Reported as:		
Prepaid expenses and other current assets	$ 73	$ 17
Other non-current assets	303	74
Net investment in sales-type leases	$ 376	$ 91

Lease Pass-Through Financing Obligation

As of December 31, 2021, we have six transactions referred to as “lease pass-through fund arrangements”. Under these arrangements, our wholly owned subsidiaries finance the cost of solar energy systems with investors through arrangements contractually structured as master leases for an initial term ranging between 10 and 25 years. These solar energy systems are subject to lease or PPAs with customers with an initial term not exceeding 25 years.

Under a lease pass-through fund arrangement, the investor makes a large upfront payment to the lessor, which is one of our subsidiaries, and in some cases, subsequent periodic payments. As of December 31, 2021, the future minimum master lease payments to be received from investors, for each of the next five years and thereafter, were as follows (in millions):

2022	$ 33
2023	26
2024	18
2025	27
2026	28
Thereafter	395
Total	$ 527

Note 13 – Equity Incentive Plans

In June 2019, we adopted the 2019 Equity Incentive Plan (the "2019 Plan"). The 2019 Plan provides for the grant of stock options, restricted stock, RSUs, stock appreciation rights, performance units and performance shares to our employees, directors and consultants. Stock options granted under the 2019 Plan may be either incentive stock options or nonstatutory stock options. Incentive stock options may only be granted to our employees. Nonstatutory stock options may be granted to our employees, directors and consultants. Generally, our stock options and RSUs vest over four years and our stock options are exercisable over a maximum period of 10 years from their grant dates. Vesting typically terminates when the employment or consulting relationship ends.

As of December 31, 2021, 49.0 million shares were reserved and available for issuance under the 2019 Plan.

The following table summarizes our stock option and RSU activity for the year ended December 31, 2021:

	Stock Options				RSUs	
	Number of Options (in thousands)	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Life (years)	Aggregate Intrinsic Value (in billions)	Number of RSUs (in thousands)	Weighted-Average Grant Date Fair Value
Beginning of period	146,933	$ 68.26			18,789	$ 136.49
Granted	925	$ 830.83			2,192	$ 784.00
Exercised or released	(27,359)	$ 16.82			(7,877)	$ 115.36
Cancelled	(1,459)	$ 195.10			(1,667)	$ 208.37
End of period	119,040	$ 84.46	5.98	$ 115.75	11,437	$ 264.68
Vested and expected to vest, December 31, 2021	115,794	$ 83.15	6.11	$ 112.74	11,181	$ 250.49
Exercisable and vested, December 31, 2021 (1)	67,828	$ 74.47	5.96	$ 66.63		

(1) Tranche 8 of the 2018 CEO Performance Award, which represents 8.4 million stock options, was achieved in the fourth quarter of 2021 and will vest upon expected certification following the filing of this Annual Report on Form 10-K.

The weighted-average grant date fair value of RSUs granted in the years ended December 31, 2021, 2020 and 2019 was $784.00, $300.51 and $56.55, respectively. The aggregate release date fair value of RSUs in the years ended December 31, 2021, 2020 and 2019 was $5.70 billion, $3.25 billion and $502 million, respectively.

The aggregate intrinsic value of options exercised in the years ended December 31, 2021, 2020, and 2019 was $26.88 billion, $1.55 billion and $237 million, respectively. During the year ended December 31, 2021, our CEO exercised all of the remaining vested options from the 2012 CEO Performance Award, which amounted to an intrinsic value of $23.45 billion.

ESPP

Our employees are eligible to purchase our common stock through payroll deductions of up to 15% of their eligible compensation, subject to any plan limitations. The purchase price would be 85% of the lower of the fair market value on the first and last trading days of each six-month offering period. During the years ended December 31, 2021, 2020 and 2019, we issued 0.5 million, 1.8 million and 2.5 million shares under the ESPP. There were 33.8 million shares available for issuance under the ESPP as of December 31, 2021.

Fair Value Assumptions

We use the fair value method in recognizing stock-based compensation expense. Under the fair value method, we estimate the fair value of each stock option award with

service or service and performance conditions and the ESPP on the grant date generally using the Black-Scholes option pricing model. The weighted-average assumptions used in the Black-Scholes model for stock options are as follows:

	Year Ended December 31,		
	2021	2020	2019
Risk-free interest rate	0.66%	0.26%	2.4%
Expected term (in years)	4.3	3.9	4.5
Expected volatility	59%	69%	48%
Dividend yield	0.0%	0.0%	0.0%
Grant date fair value per share	$ 384.07	$ 216.14	$ 22.32

The fair value of RSUs with service or service and performance conditions is measured on the grant date based on the closing fair market value of our common stock. The risk-free interest rate is based on the U.S. Treasury yield for zero-coupon U.S. Treasury notes with maturities approximating each grant's expected life. We use our historical data in estimating the expected term of our employee grants. The expected volatility is based on the average of the implied volatility of publicly traded options for our common stock and the historical volatility of our common stock.

2018 CEO Performance Award

In March 2018, our stockholders approved the Board of Directors' grant of 101.3 million stock option awards, as adjusted to give effect to the five-for-one stock split effected in the form of a stock dividend in August 2020 ("Stock Split"), to our CEO (the "2018 CEO Performance Award"). The 2018 CEO Performance Award consists of 12 vesting tranches with a vesting schedule based entirely on the attainment of both operational milestones (performance conditions) and market conditions, assuming continued employment either as the CEO or as both Executive Chairman and Chief Product Officer and service through each vesting date. Each of the 12 vesting tranches of the 2018 CEO Performance Award will vest upon certification by the Board of Directors that both (i) the market capitalization milestone for such tranche, which begins at $100.0 billion for the first tranche and increases by increments of $50.0 billion thereafter (based on both a six calendar month trailing average and a 30 calendar day trailing average, counting only trading days), has been achieved, and (ii) any one of the following eight operational milestones focused on total revenue or any one of the eight operational milestones focused on Adjusted EBITDA have been achieved for the four consecutive fiscal quarters on an annualized basis and subsequently reported by us in our consolidated financial statements filed with our Forms 10-Q and/or 10-K. Adjusted EBITDA is defined as net income (loss) attributable to common stockholders before interest expense, provision (benefit) for income taxes, depreciation and amortization and stock-based compensation. Upon vesting and exercise, including the payment of the exercise price of $70.01 per share, our CEO must hold shares that he acquires for five years post-exercise, other than a cashless exercise where shares are simultaneously sold to pay for the exercise price and any required tax withholding.

The achievement status of the operational milestones as of December 31, 2021 is provided below. Although an operational milestone is deemed achieved in the last quarter of the relevant annualized period, it may be certified only after the financial statements supporting its achievement have been filed with our Forms 10-Q and/or 10-K.

Total Annualized Revenue			Annualized Adjusted EBITDA		
Milestone (in billions)		Achievement Status	Milestone (in billions)		Achievement Status
$	20.0	Achieved	$	1.5	Achieved
$	35.0	Achieved	$	3.0	Achieved
$	55.0	Probable	$	4.5	Achieved
$	75.0	Probable	$	6.0	Achieved
$	100.0	-	$	8.0	Achieved
$	125.0	-	$	10.0	Achieved (1)
$	150.0	-	$	12.0	Probable
$	175.0	-	$	14.0	Probable

(1) Achieved in the fourth quarter of 2021 and expected to be certified following the filing of this Annual Report on Form 10-K.

Stock-based compensation under the 2018 CEO Performance Award represents a non-cash expense and is recorded as a Selling, general, and administrative operating expense in our consolidated statement of operations. In each quarter since the grant of the 2018 CEO Performance Award, we have recognized expense, generally on a pro-rated basis, for only the number of tranches (up to the maximum of 12 tranches) that corresponds to the number of operational milestones that have been achieved or have been determined probable of being achieved in the future, in accordance with the following principles.

On the grant date, a Monte Carlo simulation was used to determine for each tranche (i) a fixed amount of expense for such tranche and (ii) the future time when the market capitalization milestone for such tranche was expected to be achieved, or its "expected market capitalization milestone achievement time." Separately, based on a subjective assessment of our future financial performance, each quarter we determine whether it is probable that we will achieve each operational milestone that has not previously been achieved or deemed probable of achievement and if so, the future time when we expect to achieve that operational milestone, or its "expected operational milestone achievement time." When we first determine that an operational milestone has become probable of being achieved, we allocate the entire expense for the related tranche over the number of quarters between the grant date and the then-applicable "expected full achievement time." The "expected full achievement time" at any given time is the later of (i) the expected operational milestone achievement time (if the related operational milestone has not yet been achieved) and (ii) the expected market capitalization milestone achievement time (if the related market capitalization milestone had not yet been achieved). We immediately recognize a catch-up expense for all accumulated expense for the quarters from the grant date through the quarter in which the operational milestone was first deemed probable of being achieved. Each quarter thereafter, we recognize the prorated portion of the then-remaining expense for the tranche based on the number of quarters between such quarter and the then-applicable expected full achievement time, except that upon the achievement of both a market capitalization milestone and operational milestone with respect to a tranche, all remaining expense for that tranche is immediately recognized.

As a result, we have experienced significant catch-up expenses in quarters when one or more operational milestones were first determined to be probable of achievement. Historically, the expected market capitalization achievement times were generally later than the related expected operational milestone achievement times. Therefore, when market capitalization milestones were achieved earlier than originally forecasted due to periods of rapid stock price appreciation, we had higher catch-up expenses and the remaining expenses were being recognized over shorter periods of time at a higher per-quarter rate. All market capitalization milestones were achieved as of the second quarter of 2021.

During the year ended December 31, 2021, five operational milestones became probable of achievement and consequently, we recognized an aggregate catch-up expense of $571 million.

As of December 31, 2021, we had $65 million of total unrecognized stock-based compensation expense remaining, which will be recognized over a weighted-average period of 0.6 years. For the years ended December 31, 2021, 2020 and 2019, we recorded stock-based compensation expense of $910 million, $838 million and $296 million, respectively, related to the 2018 CEO Performance Award.

Other Performance-Based Grants

2012 CEO Performance Award

In August 2012, our Board of Directors granted 26.4 million stock option awards to our CEO (the "2012 CEO Performance Award"), as adjusted to give effect to the Stock Split. The 2012 CEO Performance Award consists of 10 vesting tranches with a vesting schedule based entirely on the attainment of both performance conditions and market conditions, assuming continued employment and service through each vesting date. During the year ended December 31, 2021, our CEO exercised all of the remaining 22.9 million vested options from the 2012 CEO Performance Award.

As of December 31, 2021, the performance milestone of gross margin of 30% or more for four consecutive quarters was considered not probable of achievement for which the unrecognized stock-based compensation is immaterial. For the years ended December 31, 2021, 2020 and 2019, we did not record any stock-based compensation expense related to the 2012 CEO Performance Award.

2014 Performance-Based Stock Option Awards

In 2014, to create incentives for continued long-term success beyond the Model S program and to closely align executive pay with our stockholders' interests in the achievement of significant milestones by us, the Compensation Committee of our Board of Directors granted stock option awards to certain employees (excluding our CEO) to purchase an aggregate of 5.4 million shares of our common stock, as adjusted to give effect to the Stock Split. Each award consisted of four vesting tranches with the vesting schedule based entirely on the attainment of the future performance milestones, assuming continued employment and service through each vesting date.

As of December 31, 2021, the performance milestone of annualized gross margin of greater than 30% for any three-year period was considered not probable of achievement for which the unrecognized stock-based compensation is immaterial. For the years ended December 31, 2021, 2020 and 2019, we did not record any stock-based compensation expense related to this grant.

2021 Performance-Based Stock Option & RSU Awards

During the fourth quarter of 2021, the Compensation Committee of our Board of Directors granted to certain employees restricted stock units and stock options to purchase an aggregate 0.7 million shares of our common stock to create incentives for continued long-term success and to closely align compensation with our stockholders' interests in the achievement of certain performance milestones by our company.

We begin recording stock-based compensation expense when the performance milestones become probable of achievement. Following achievement, vesting occurs over a two year period with continued employment. As of December 31, 2021, we had unrecognized stock-based compensation expense of $413 million for this grant as it was not considered probable of achievement. For the year ended December 31, 2021, we did not record stock-based compensation expense related to this grant.

Summary Stock-Based Compensation Information

The following table summarizes our stock-based compensation expense by line item in the consolidated statements of operations (in millions):

	Year Ended December 31,		
	2021	2020	2019
Cost of revenues	$ 421	$ 281	$ 128
Research and development	448	346	285
Selling, general and administrative	1,252	1,107	482
Restructuring and other	—	—	3
Total	$ 2,121	$ 1,734	$ 898

Our income tax benefits recognized from stock-based compensation arrangements in each of the periods presented were immaterial due to cumulative losses and valuation allowances. During the years ended December 31, 2021, 2020 and 2019, stock-based compensation expense capitalized to our consolidated balance sheets was $182 million, $89 million and $52 million, respectively. As of December 31, 2021, we had $3.43 billion of total unrecognized stock-based compensation expense related to non-performance awards, which will be recognized over a weighted-average period of 2.10 years.

Note 14 – Income Taxes

A provision for income taxes of $699 million, $292 million and $110 million has been recognized for the years ended December 31, 2021, 2020 and 2019, respectively, related primarily to our subsidiaries located outside of the U.S. Our income (loss) before provision for income taxes for the years ended December 31, 2021, 2020 and 2019 was as follows (in millions):

	Year Ended December 31,		
	2021	2020	2019
Domestic	$ (130)	$ (198)	$ (287)
Noncontrolling interest and redeemable noncontrolling interest	125	141	87
Foreign	6,348	1,211	(465)
Income (loss) before income taxes	$ 6,343	$ 1,154	$ (665)

The components of the provision for income taxes for the years ended December 31, 2021, 2020 and 2019 consisted of the following (in millions):

	Year Ended December 31,		
	2021	2020	2019
Current:			
Federal	$ —	$ —	$ —
State	9	4	5
Foreign	839	248	86
Total current	848	252	91
Deferred:			
Federal	—	—	(4)
State	—	—	—
Foreign	(149)	40	23
Total deferred	(149)	40	19
Total provision for income taxes	$ 699	$ 292	$ 110

Deferred tax assets (liabilities) as of December 31, 2021 and 2020 consisted of the following (in millions):

	December 31, 2021	December 31, 2020
Deferred tax assets:		
Net operating loss carry-forwards	$ 7,607	$ 2,172
Research and development credits	923	624
Other tax credits and attributes	335	168
Deferred revenue	546	450
Inventory and warranty reserves	377	315
Stock-based compensation	115	98
Operating lease right-of-use liabilities	430	335
Deferred GILTI tax assets	556	581
Accruals and others	191	205

Total deferred tax assets	11,080	4,948
Valuation allowance	(9,074)	(2,930)
Deferred tax assets, net of valuation allowance	2,006	2,018
Deferred tax liabilities:		
Depreciation and amortization	(1,279)	(1,488)
Investment in certain financing funds	(209)	(198)
Operating lease right-of-use assets	(391)	(305)
Deferred revenue	(49)	(50)
Other	(13)	(61)
Total deferred tax liabilities	(1,941)	(2,102)
Deferred tax assets (liabilities), net of valuation allowance	$ 65	$ (84)

As of December 31, 2021, we recorded a valuation allowance of $9.07 billion for the portion of the deferred tax asset that we do not expect to be realized. The valuation allowance on our net deferred taxes increased by $6.14 billion, $974 million, and $150 million during the years ended December 31, 2021, 2020 and 2019, respectively. The changes in valuation allowance are primarily due to additional U.S. deferred tax assets and liabilities incurred in the respective year. We have $417 million of deferred tax assets in foreign jurisdictions, which management believes are more-likely-than-not to be fully realized given the expectation of future earnings in these jurisdictions. We did not have any material releases of valuation allowance for the years ended December 31, 2021, 2020 and 2019. We continue to monitor the realizability of the U.S. deferred tax assets taking into account multiple factors. In completing this assessment, we considered both objective and subjective factors. These factors included, but were not limited to, a history of losses in prior years, excess tax benefits related to stock-based compensation, future reversal of existing temporary differences and tax planning strategies. After evaluating all available evidence, we intend to continue maintaining a full valuation allowance on our U.S. deferred tax assets until there is sufficient evidence to support the reversal of all or some portion of these allowances. Given the improvement in our operating results and depending on the amount of stock-based compensation tax deductions available in the future, we may release the valuation allowance associated with the U.S. deferred tax assets in the next few years. Release of all, or a portion, of the valuation allowance would result in the recognition of certain deferred tax assets and a decrease to income tax expense for the period the release is recorded.

The reconciliation of taxes at the federal statutory rate to our provision for income taxes for the years ended December 31, 2021, 2020 and 2019 was as follows (in millions):

	Year Ended December 31,		
	2021	2020	2019
Tax at statutory federal rate	$ 1,332	$ 242	$ (139)
State tax, net of federal benefit	6	4	5
Nondeductible executive compensations	201	184	62
Other nondeductible expenses	67	52	32
Excess tax benefits related to stock based compensation	(7,123)	(666)	(7)
Foreign income rate differential	(668)	33	189
U.S. tax credits	(328)	(181)	(107)
Noncontrolling interests and redeemable noncontrolling interests adjustment	11	5	(29)
GILTI inclusion	1,008	133	—
Convertible debt	—	—	(4)
Unrecognized tax benefits	28	1	17
Change in valuation allowance	6,165	485	91
Provision for income taxes	$ 699	$ 292	$ 110

As of December 31, 2021, we had $31.2 billion of federal and $21.6 billion of state net operating loss carry-forwards available to offset future taxable income, some of which, if not utilized, will begin to expire in 2022 for federal and state purposes. A portion of these losses were generated by SolarCity and some of the companies we acquired, and therefore are subject to change of control provisions, which limit the amount of acquired tax attributes that can be utilized in a given tax year. We do not expect the change of control limitations to significantly impact our ability to utilize these attributes.

Our 2021 net operating loss included corporate income tax deductions related to our CEO's exercise of the remaining stock options from the 2012 CEO Performance Award, which resulted in a $23.45 billion tax deduction. Such increase in net operating loss is included in our deferred income tax assets, offset by a valuation allowance. Section 162(m) of the Internal Revenue Code was amended for deductibility of executive compensation for stock grants after 2017. Therefore, we are not expecting substantial corporate income tax deductions from our CEO's subsequent option exercises.

As of December 31, 2021, we had research and development tax credits of $738 million and $584 million for federal and state income tax purposes, respectively. If not utilized, the federal research and development tax credits will expire in various amounts beginning in 2024. However, the state of California research and development tax

credits can be carried forward indefinitely. In addition, we have other general business tax credits of $186 million for federal income tax purposes, which will not begin to significantly expire until 2033.

Federal and state laws can impose substantial restrictions on the utilization of net operating loss and tax credit carry-forwards in the event of an “ownership change,” as defined in Section 382 of the Internal Revenue Code. We have determined that no significant limitation would be placed on the utilization of our net operating loss and tax credit carry-forwards due to prior ownership changes.

The local government of Shanghai granted a beneficial corporate income tax rate of 15% to certain eligible enterprises, compared to the 25% statutory corporate income tax rate in China. Our Gigafactory Shanghai subsidiary was granted this beneficial income tax rate of 15% for 2019 through 2023.

We constantly assess our intent to reinvest our offshore earnings. As of December 31, 2021, we no longer intend to reinvest certain undistributed earnings of our foreign entities that have been previously taxed in the U.S, while for the remainder of our undistributed earnings, we intend to indefinitely reinvest. We have recorded the taxes associated with the earnings we intend to repatriate in the future. For the earnings we intend to indefinitely reinvest, no deferred tax liabilities for foreign withholding or state taxes have been recorded. As of December 31, 2021, such undistributed earnings were approximately $161 million. The amount of any unrecognized deferred tax liability associated with these earnings is immaterial.

Uncertain Tax Positions

The changes to our gross unrecognized tax benefits were as follows (in millions):

December 31, 2018	$	253
Decreases in balances related to prior year tax positions		(39)
Increases in balances related to current year tax positions		59
December 31, 2019		273
Increases in balances related to prior year tax positions		66
Increases in balances related to current year tax positions		41
December 31, 2020		380
Increases in balances related to prior year tax positions		117
Decreases in balances related to prior year tax positions		(90)
Increases in balances related to current year tax positions		124
December 31, 2021	$	531

As of December 31, 2021, accrued interest and penalties related to unrecognized tax benefits are classified as income tax expense and were immaterial. Unrecognized tax benefits of $473 million, if recognized, would not affect our effective tax rate since the tax benefits would increase a deferred tax asset that is currently fully offset by a valuation allowance.

We file income tax returns in the U.S., California and various state and foreign jurisdictions. We are currently under examination by the IRS for the years 2015 to 2018. Additional tax years within the periods 2004 to 2014 and 2019 to 2020 remain subject to examination for federal income tax purposes, and 2004 and subsequent tax years remain subject to examination for California income tax purposes. All net operating losses and tax credits generated to date are subject to adjustment for U.S. federal and California income tax purposes. Our returns for 2008 and subsequent tax years remain subject to examination in other U.S. state and foreign jurisdictions.

Given the uncertainty in timing and outcome of our tax examinations, an estimate of the range of the reasonably possible change in gross unrecognized tax benefits within twelve months cannot be made at this time.

Note 15 – Commitments and Contingencies

Operating Lease Arrangement in Buffalo, New York

We have an operating lease through the Research Foundation for the State University of New York (the "SUNY Foundation") with respect to Gigafactory New York. Under the lease and a related research and development agreement, we are continuing to further develop the facility.

Under this agreement, we are obligated to, among other things, meet employment targets as well as specified minimum numbers of personnel in the State of New York and in Buffalo, New York and spend or incur $5.00 billion in combined capital, operational expenses, costs of goods sold and other costs in the State of New York during the 10-year period beginning April 30, 2018. On an annual basis during the initial lease term, as measured on each anniversary of such date, if we fail to meet these specified investment and job creation requirements, then we would be obligated to pay a $41 million "program payment" to the SUNY Foundation for each year that we fail to meet these requirements. Furthermore, if the arrangement is terminated due to a material breach by us, then additional amounts may become payable by us.

As we temporarily suspended most of our manufacturing operations at Gigafactory New York pursuant to a New York State executive order issued in March 2020 as a result of the COVID-19 pandemic, we were granted a deferral of our obligation to be compliant with our applicable targets through December 31, 2021 in an amendment memorialized in August 2021. The amendment also extended our overall agreement to spend or incur $5.00 billion in combined capital, operational expenses, costs of goods sold and other costs in the State of New York through December 31, 2029. As of December 31, 2021, we are currently in excess of such targets relating to investments and personnel in the State of New York and Buffalo and do not currently expect any issues meeting our applicable obligations following this expected deferral or in the years beyond. However, if our expectations as to the costs and timelines of our investment and operations at Buffalo or our production ramp of the Solar Roof prove incorrect, we may incur additional expenses or be required to make substantial payments to the SUNY Foundation.

Operating Lease Arrangement in Shanghai, China

We have an operating lease arrangement for an initial term of 50 years with the local government of Shanghai for land use rights where we are constructing Gigafactory Shanghai. Under the terms of the arrangement, we are required to spend RMB 14.08 billion in capital expenditures by the end of 2023 and to generate RMB 2.23 billion of annual tax revenues starting at the end of 2023. If we are unwilling or unable to meet such target or obtain periodic project approvals, in accordance with the Chinese government's standard terms for such arrangements, we would be required to revert the site to the local government and receive compensation for the remaining value of the land lease, buildings and fixtures. We expect to meet the capital expenditure and tax revenue requirements based on our current level of spend and sales.

Legal Proceedings

Litigation Relating to the SolarCity Acquisition

Between September 1, 2016 and October 5, 2016, seven lawsuits were filed in the Delaware Court of Chancery by purported stockholders of Tesla challenging our acquisition of SolarCity Corporation ("SolarCity"). Following consolidation, the lawsuit names as defendants the members of Tesla's board of directors as then constituted and alleges, among other things, that board members breached their fiduciary duties in connection with the acquisition. The complaint asserts both derivative claims and direct claims on behalf of a purported class and seeks, among other relief, unspecified monetary damages, attorneys' fees and costs. On January 27, 2017, defendants filed a motion to dismiss the operative complaint. Rather than respond to the defendants' motion, the plaintiffs filed an amended complaint. On March 17, 2017, defendants filed a motion to dismiss the amended complaint. On December 13, 2017, the Court heard oral argument on the motion. On March 28, 2018, the Court denied defendants' motion to dismiss. Defendants filed a request for interlocutory appeal, and the Delaware Supreme Court denied that request without ruling on the merits but electing not to hear an appeal at this early stage of the case. Defendants filed their answer on May 18, 2018, and mediations were held on June 10, 2019. Plaintiffs and defendants filed respective motions for summary judgment on August 25, 2019, and further mediations were held on October 3, 2019. The Court held a hearing on the motions for summary judgment on November 4, 2019. On January 22, 2020, all of the director defendants except Elon Musk reached a settlement to resolve the lawsuit against them for an amount to be paid entirely under the applicable insurance policy. The settlement, which does not involve an admission of any wrongdoing by any party, was approved by the Court on August 17, 2020. Tesla received payment of approximately $43 million on September 16, 2020, which has been recognized in our consolidated statement of operations as a reduction to Selling, general and administrative operating expenses for costs previously incurred related to the acquisition of SolarCity. On February 4, 2020, the Court issued a ruling that denied plaintiffs' previously-filed motion for summary judgment and granted in part and denied in part defendants' previously-filed motion for summary judgment. The case was set for trial in March 2020 until it was postponed by the Court due to safety precautions concerning COVID-19. The trial was held from July 12 to July 23, 2021 and on August 16, 2021. On October 22, 2021, the Court approved the parties' joint stipulation that (a) the class is decertified and the action shall continue exclusively as a derivative action under Court of Chancery Rule 23.1; and (b) the direct claims against Elon Musk are dismissed with prejudice. Following post-trial briefing, post-trial argument was held on January 18, 2022. The matter is now submitted, and a decision is expected by middle of 2022.

These plaintiffs and others filed parallel actions in the U.S. District Court for the District of Delaware on or about April 21, 2017. They include claims for violations of the federal securities laws and breach of fiduciary duties by Tesla's board of directors. Those actions have been consolidated and stayed pending the above-referenced Chancery Court litigation.

Litigation Relating to 2018 CEO Performance Award

On June 4, 2018, a purported Tesla stockholder filed a putative class and derivative action in the Delaware Court of Chancery against Elon Musk and the members of Tesla's board of directors as then constituted, alleging corporate waste, unjust enrichment and that such board members breached their fiduciary duties by approving the stock-based compensation plan awarded to Elon Musk in 2018. The complaint seeks, among other things, monetary damages and rescission or reformation of the stock-based compensation plan. On August 31, 2018, defendants filed a motion to dismiss the complaint; plaintiff filed its opposition brief on November 1, 2018; and defendants filed a reply brief on December 13, 2018. The hearing on the motion to dismiss was held on May 9, 2019. On September 20, 2019, the Court granted the motion to dismiss as to the corporate waste claim but denied the motion as to the breach of fiduciary duty and unjust enrichment claims. Defendants' answer was filed on December 3, 2019.

On January 25, 2021, the Court conditionally certified certain claims and a class of Tesla stockholders as a class action. On September 30, 2021, plaintiff filed a motion for leave to file a verified amended derivative complaint. On October 1, 2021, defendants Kimbal Musk and Steve Jurvetson moved for summary judgment as to the claims against them. Following the motion, plaintiff agreed to voluntarily dismiss the claims against Kimbal Musk and Steve Jurvetson. Plaintiff also moved for summary judgment on October 1, 2021. On October 27, 2021, the Court approved the parties' joint stipulation that, among other things, (a) all claims against Kimbal Musk and Steve Jurvetson in the Complaint are dismissed with prejudice; (b) the class is decertified and the action shall continue exclusively as a derivative action under Court of Chancery Rule 23.1; and (c) the direct claims against the remaining defendants are dismissed with prejudice. On November 18, 2021, the remaining defendants (a) moved for partial summary judgment, (b) opposed plaintiff's summary judgment motion, and (c) opposed the plaintiff's motion to amend his complaint. Oral argument on summary judgment and the motion to amend were set for January 6, 2022, however, it was canceled by the Court. The case was recently assigned to a different judge. Trial is currently set for April 18-22, 2022.

Litigation Related to Directors' Compensation

On June 17, 2020, a purported Tesla stockholder filed a derivative action in the Delaware Court of Chancery, purportedly on behalf of Tesla, against certain of Tesla's current and former directors regarding compensation awards granted to Tesla's directors, other than Elon Musk, between 2017 and 2020. The suit asserts claims for breach of fiduciary duty and unjust enrichment and seeks declaratory and injunctive relief, unspecified damages and other relief. Defendants filed their answer on September 17, 2020. Trial is set for September 11, 2023.

Litigation Relating to Potential Going Private Transaction

Between August 10, 2018 and September 6, 2018, nine purported stockholder class actions were filed against Tesla and Elon Musk in connection with Mr. Musk's August 7, 2018 Twitter post that he was considering taking Tesla private. All of the suits are now pending in the U.S. District Court for the Northern District of California. Although the complaints vary in certain respects, they each purport to assert claims for violations of federal securities laws related to Mr. Musk's statement and seek unspecified compensatory damages and other relief on behalf of a purported class of purchasers of Tesla's securities. Plaintiffs filed their consolidated complaint on January 16, 2019 and added as defendants the members of Tesla's board of directors. The now-consolidated purported stockholder class action was stayed while the issue of selection of lead counsel was briefed and argued before the Ninth Circuit. The Ninth Circuit ruled regarding lead counsel. Defendants filed a motion to dismiss the complaint on November 22, 2019. The hearing on the motion was held on March 6, 2020. On April 15, 2020, the Court denied defendants' motion to dismiss. The parties stipulated to certification of a class of stockholders, which the court granted on November 25, 2020. On January 11, 2022, plaintiff filed a motion for partial summary judgment which is currently pending before the Court. Trial is set for May 2022.

Between October 17, 2018 and March 8, 2021, seven derivative lawsuits were filed in the Delaware Court of Chancery, purportedly on behalf of Tesla, against Mr. Musk and the members of Tesla's board of directors, as constituted at relevant times, in relation to statements made and actions connected to a potential going private transaction, with certain of the lawsuits challenging additional Twitter posts by Mr. Musk, among other things. Five of those actions were consolidated, and all seven actions have been stayed pending resolution of the above-referenced consolidated purported stockholder class action. In addition to these cases, two derivative lawsuits were filed on October 25, 2018 and February 11, 2019 in the U.S. District Court for the District of Delaware, purportedly on behalf of Tesla, against Mr. Musk and the members of the Tesla board of directors as then constituted. Those cases have also been consolidated and stayed pending resolution of the above-referenced consolidated purported stockholder class action.

Unless otherwise stated, the individual defendants named in the stockholder proceedings described above and the Company with respect to the stockholder class action proceedings described above believe that the claims in such proceedings have no merit and intend to defend against them vigorously. We are unable to estimate the possible loss or range of loss, if any, associated with these claims.

On November 15, 2021, JPMorgan Chase Bank ("JP Morgan") filed a lawsuit against Tesla in the Southern District of New York alleging breach of a stock warrant agreement that was entered into as part of a convertible notes offering in 2014. In 2018, JP Morgan informed Tesla that it had adjusted the strike price based upon Mr. Musk's August 7, 2018 Twitter post that he was considering taking Tesla private. Tesla disputed JP Morgan's adjustment as a violation of the parties' agreement. In 2021 Tesla delivered shares to JP Morgan per the agreement, which they duly accepted. JP Morgan now alleges that it is owed approximately $162 million as the value of additional shares that it claims should have been delivered as a result of the adjustment to the strike price in 2018. On January 24, 2022, Tesla filed multiple counterclaims as part of its answer to the underlying lawsuit, asserting among other points that JP Morgan should have terminated the stock warrant agreement in 2018 rather than make an adjustment to the strike price that it should have known would lead to a commercially unreasonable result. Tesla believes that the adjustments made by JP Morgan were neither proper nor commercially reasonable, as required under the stock warrant agreements.

Litigation and Investigations Relating to Alleged Race Discrimination

On October 4, 2021, in a case captioned *Diaz v. Tesla*, a jury in the Northern District of California returned a verdict of $136.9 million against Tesla on claims by a former contingent worker that he was subjected to race discrimination while assigned to work at Tesla's Fremont Factory from 2015-2016. The Company does not believe that the facts and law justify the verdict. On November 16, 2021, Tesla filed a post-trial motion for relief that included a request for a new trial or reduction of the jury's damages. The court held a hearing on Tesla's motion on January 19, 2022, and a decision is expected soon. Tesla will pursue next steps, including an appeal, if necessary.

On January 3, 2022, the California Department of Fair Employment and Housing ("DFEH") issued Tesla a Notice of Cause Finding and Mandatory Dispute Resolution following an investigation into undisclosed allegations of race discrimination and harassment at unspecified Tesla locations. The DFEH gave notice that, based upon the evidence collected, it believes that it has grounds to file a civil complaint against Tesla.

Certain Investigations and Other Matters

We receive requests for information from regulators and governmental authorities, such as the National Highway Traffic Safety Administration, the National Transportation Safety Board, the SEC, the Department of Justice ("DOJ") and various state, federal, and international agencies. We routinely cooperate with such regulatory and governmental requests, including subpoenas, formal and informal requests and other investigations and inquiries.

For example, the SEC had issued subpoenas to Tesla in connection with Elon Musk's prior statement that he was considering taking Tesla private. The take-private investigation was resolved and closed with a settlement entered into with the SEC in September 2018 and as further clarified in April 2019 in an amendment. More recently, on November 16, 2021, the SEC issued a subpoena to us seeking information on our governance processes around compliance with the SEC settlement, as amended.

On December 4, 2019, the SEC issued a subpoena seeking information concerning certain financial data and contracts including Tesla's regular financing arrangements. On December 16, 2021, the SEC informed us that it closed this investigation. Separately, the DOJ had also asked us to voluntarily provide it with information about the above matter related to taking Tesla private and Model 3 production rates. We have not received any further requests from DOJ on these matters since we last provided information in May 2019. There have not been any additional developments in these matters that we deem to be material, and to our knowledge no government agency in any ongoing investigation has concluded that any wrongdoing occurred. As is our normal practice, we have been cooperating and will continue to cooperate with government authorities. We cannot predict the outcome or impact of any ongoing matters. Should the government decide to pursue an enforcement action, there exists the possibility of a material adverse impact on our business, results of operation, prospects, cash flows and financial position.

We are also subject to various other legal proceedings and claims that arise from the normal course of business activities. If an unfavorable ruling or development were to occur, there exists the possibility of a material adverse impact on our business, results of operations, prospects, cash flows, financial position and brand.

Indemnification and Guaranteed Returns

We are contractually obligated to compensate certain fund investors for any losses that they may suffer in certain limited circumstances resulting from reductions in investment tax credits claimed under U.S. federal laws for the installation of solar power facilities and energy storage systems that are charged from a co-sited solar power facility. We believe that any payments to the fund investors in excess of the amounts already recognized by us for this obligation are not probable or material based on the facts known at the filing date.

We are eligible to receive certain state and local incentives that are associated with renewable energy generation. The amount of incentives that can be claimed is based on the projected or actual solar energy system size and/or the amount of solar energy produced. We also currently participate in one state's incentive program that is based on either the fair market value or the tax basis of solar energy systems placed in service. State and local incentives received are allocated between us and fund investors in accordance with the contractual provisions of each fund. We are not contractually obligated to indemnify any fund investor for any losses they may incur due to a shortfall in the amount of state or local incentives actually received.

Letters of Credit

As of December 31, 2021, we had $286 million of unused letters of credit outstanding.

Note 16 – Variable Interest Entity Arrangements

We have entered into various arrangements with investors to facilitate the funding and monetization of our solar energy systems and vehicles. In particular, our wholly owned subsidiaries and fund investors have formed and contributed cash and assets into various financing funds and entered into related agreements. We have determined that the funds are variable interest entities ("VIEs") and we are the primary beneficiary of these VIEs by reference to the power and benefits criterion under ASC 810, *Consolidation*. We have considered the provisions within the agreements, which grant us the power to manage and make decisions that affect the operation of these VIEs, including determining the solar energy systems and the associated customer contracts to be sold or contributed to these VIEs, redeploying solar energy systems and managing customer receivables. We consider that the rights granted to the fund investors under the agreements are more protective in nature rather than participating.

As the primary beneficiary of these VIEs, we consolidate in the financial statements the financial position, results of operations and cash flows of these VIEs, and all intercompany balances and transactions between us and these VIEs are eliminated in the consolidated financial statements. Cash distributions of income and other receipts by a fund, net of agreed upon expenses, estimated expenses, tax benefits and detriments of income and loss and tax credits, are allocated to the fund investor and our subsidiary as specified in the agreements.

Generally, our subsidiary has the option to acquire the fund investor's interest in the fund for an amount based on the market value of the fund or the formula specified

in the agreements.

Upon the sale or liquidation of a fund, distributions would occur in the order and priority specified in the agreements.

Pursuant to management services, maintenance and warranty arrangements, we have been contracted to provide services to the funds, such as operations and maintenance support, accounting, lease servicing and performance reporting. In some instances, we have guaranteed payments to the fund investors as specified in the agreements. A fund's creditors have no recourse to our general credit or to that of other funds. None of the assets of the funds had been pledged as collateral for their obligations.

The aggregate carrying values of the VIEs' assets and liabilities, after elimination of any intercompany transactions and balances, in the consolidated balance sheets were as follows (in millions):

	December 31, 2021	December 31, 2020
Assets		
Current assets		
Cash and cash equivalents	$ 79	$ 87
Accounts receivable, net	22	28
Prepaid expenses and other current assets	152	105
Total current assets	253	220
Solar energy systems, net	4,108	4,749
Other non-current assets	265	182
Total assets	$ 4,626	$ 5,151
Liabilities		
Current liabilities		
Accrued liabilities and other	$ 74	$ 63
Deferred revenue	10	11
Customer deposits	—	14
Current portion of debt and finance leases	1,031	797
Total current liabilities	1,115	885
Deferred revenue, net of current portion	153	168
Debt and finance leases, net of current portion	2,093	1,346
Other long-term liabilities	11	19
Total liabilities	$ 3,372	$ 2,418

Note 17 – Related Party Transactions

In May 2019, our CEO purchased from us 514,400 shares of our common stock in a public offering at the public offering price for an aggregate $25 million.

In February 2020, our CEO and a member of our Board of Directors purchased from us 65,185 and 6,250 shares, respectively, of our common stock in a public offering at the public offering price for an aggregate $10 million and $1 million, respectively.

In June 2020, our CEO entered into an indemnification agreement with us for an interim term of 90 days. During the interim term, we resumed our annual evaluation of all available options for providing directors' and officers' indemnity coverage, which we had suspended during the height of shelter-in-place requirements related to the COVID-19 pandemic. As part of such process, we obtained a binding market quote for a directors' and officers' liability insurance policy with an aggregate coverage limit of $100 million.

Pursuant to the indemnification agreement, our CEO provided, from his personal funds, directors' and officers' indemnity coverage to us during the interim term in the

event such coverage is not indemnifiable by us, up to a total of $100 million. In return, we paid our CEO a total of $3 million, which represents the market-based premium for the market quote described above as prorated for 90 days and further discounted by 50%. Following the lapse of the 90-day period, we did not extend the term of the indemnification agreement with our CEO and instead bound a customary directors' and officers' liability insurance policy with third-party carriers.

In relation to our CEO's exercise of stock options and sale of common stock from the 2012 CEO Performance Award, Tesla withheld the appropriate amount of taxes. However, given the significant amounts involved, our CEO entered into an indemnification agreement with us in November 2021 for additional taxes owed, if any.

Note 18 – Segment Reporting and Information about Geographic Areas

We have two operating and reportable segments: (i) automotive and (ii) energy generation and storage. The automotive segment includes the design, development, manufacturing, sales and leasing of electric vehicles as well as sales of automotive regulatory credits. Additionally, the automotive segment is also comprised of services and other, which includes non-warranty after-sales vehicle services, sales of used vehicles, retail merchandise, sales by our acquired subsidiaries to third party customers and vehicle insurance revenue. The energy generation and storage segment includes the design, manufacture, installation, sales and leasing of solar energy generation and energy storage products and related services and sales of solar energy systems incentives. Our CODM does not evaluate operating segments using asset or liability information. The following table presents revenues and gross profit by reportable segment (in millions):

	Year Ended December 31,		
	2021	2020	2019
Automotive segment			
Revenues	$ 51,034	$ 29,542	$ 23,047
Gross profit	$ 13,735	$ 6,612	$ 3,879
Energy generation and storage segment			
Revenues	$ 2,789	$ 1,994	$ 1,531
Gross profit	$ (129)	$ 18	$ 190

The following table presents revenues by geographic area based on the sales location of our products (in millions):

	Year Ended December 31,		
	2021	2020	2019
United States	$ 23,973	$ 15,207	$ 12,653
China	13,844	6,662	2,979
Other	16,006	9,667	8,946
Total	$ 53,823	$ 31,536	$ 24,578

The following table presents long-lived assets by geographic area (in millions):

	December 31, 2021	December 31, 2020
United States	$ 19,026	$ 15,989
Germany	2,606	894
China	2,415	1,479
Other International	602	364
Total	$ 24,649	$ 18,726

Note 19 – Restructuring and Other

During the year ended December 31, 2021, we recorded $101 million of impairment losses on bitcoin. We also realized gains of $128 million in connection with selling a portion of our holdings in March 2021.

During the year ended December 31, 2019, we carried out certain restructuring actions in order to reduce costs and improve efficiency. As a result, we recognized $50 million of costs primarily related to employee termination expenses and losses from closing certain stores impacting both segments. We recognized $47 million in impairment related to the in-process research and development intangible asset as we abandoned further development efforts and $15 million for the related equipment within the energy generation and storage segment. We also incurred a loss of $37 million for closing operations in certain facilities. On the statement of cash flows, the amounts were presented in the captions in which such amounts would have been recorded absent the impairment charges. The employee termination expenses were substantially paid by December 31, 2019, while the remaining amounts were non-cash.

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

Our management, with the participation of our Chief Executive Officer and our Chief Financial Officer, evaluated the effectiveness of our disclosure controls and procedures pursuant to Rule 13a-15 under the Securities Exchange Act of 1934, as amended (the "Exchange Act"). In designing and evaluating the disclosure controls and procedures, our management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives. In addition, the design of disclosure controls and procedures must reflect the fact that there are resource constraints and that our management is required to apply its judgment in evaluating the benefits of possible controls and procedures relative to their costs.

Based on this evaluation, our Chief Executive Officer and our Chief Financial Officer concluded that, as of December 31, 2021, our disclosure controls and procedures were designed at a reasonable assurance level and were effective to provide reasonable assurance that the information we are required to disclose in reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC rules and forms, and that such information is accumulated and communicated to our management, including our Chief Executive Officer and our Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosures.

Management's Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting. Internal control over financial reporting is a process designed by, or under the supervision of, our Chief Executive Officer and Chief Financial Officer 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 and 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 our assets; (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 our receipts and expenditures are being made only in accordance with authorizations of our management and directors and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our assets that could have a material effect on the financial statements.

Under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting based on criteria established in Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO"). Our management concluded that our internal control over financial reporting was effective as of December 31, 2021.

Our independent registered public accounting firm, PricewaterhouseCoopers LLP, has audited the effectiveness of our internal control over financial reporting as of December 31, 2021, as stated in their report which is included herein.

Limitations on the Effectiveness of Controls

Because of inherent limitations, internal control over financial reporting may not prevent or detect misstatements and 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.

Changes in Internal Control over Financial Reporting

There was no change in our internal control over financial reporting that occurred during the quarter ended December 31, 2021, which has materially affected, or is

reasonably likely to materially affect, our internal control over financial reporting.

ITEM 9B. OTHER INFORMATION

None.

ITEM 9C. DISCLOSURE REGARDING FOREIGN JURISDICTIONS THAT PREVENT INSPECTIONS

Not applicable.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information required by this Item 10 of Form 10-K will be included in our 2022 Proxy Statement to be filed with the Securities and Exchange Commission in connection with the solicitation of proxies for our 2022 Annual Meeting of Stockholders and is incorporated herein by reference. The 2022 Proxy Statement will be filed with the Securities and Exchange Commission within 120 days after the end of the fiscal year to which this report relates.

ITEM 11. EXECUTIVE COMPENSATION

The information required by this Item 11 of Form 10-K will be included in our 2022 Proxy Statement and is incorporated herein by reference.

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

The information required by this Item 12 of Form 10-K will be included in our 2022 Proxy Statement and is incorporated herein by reference.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS AND DIRECTOR INDEPENDENCE

The information required by this Item 13 of Form 10-K will be included in our 2022 Proxy Statement and is incorporated herein by reference.

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information required by this Item 14 of Form 10-K will be included in our 2022 Proxy Statement and is incorporated herein by reference.

PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

1. Financial statements (see *Index to Consolidated Financial Statements* in Part II, Item 8 of this report)
2. 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. The exhibits listed in the following *Index to Exhibits* are filed or incorporated by reference as part of this report

INDEX TO EXHIBITS

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Exhibit	Filing Date	
3.1	Amended and Restated Certificate of Incorporation of the Registrant.	10-K	001-34756	3.1	March 1, 2017	
3.2	Certificate of Amendment to the Amended and Restated Certificate of Incorporation of the Registrant.	10-K	001-34756	3.2	March 1, 2017	
3.3	Amended and Restated Bylaws of the Registrant.	8-K	001-34756	3.2	February 1, 2017	
4.1	Specimen common stock certificate of the Registrant.	10-K	001-34756	4.1	March 1, 2017	
4.2	Fifth Amended and Restated Investors' Rights Agreement, dated as of August 31, 2009, between Registrant and certain holders of the Registrant's capital stock named therein.	S-1	333-164593	4.2	January 29, 2010	
4.3	Amendment to Fifth Amended and Restated Investors' Rights Agreement, dated as of May 20, 2010, between Registrant and certain holders of the Registrant's capital stock named therein.	S-1/A	333-164593	4.2A	May 27, 2010	
4.4	Amendment to Fifth Amended and Restated Investors' Rights Agreement between Registrant, Toyota Motor Corporation and certain holders of the Registrant's capital stock named therein.	S-1/A	333-164593	4.2B	May 27, 2010	
4.5	Amendment to Fifth Amended and Restated Investor's Rights Agreement, dated as of June 14, 2010, between Registrant and certain holders of the Registrant's capital stock named therein.	S-1/A	333-164593	4.2C	June 15, 2010	
4.6	Amendment to Fifth Amended and Restated Investor's Rights Agreement, dated as of November 2, 2010, between Registrant and certain holders of the Registrant's capital stock named therein.	8-K	001-34756	4.1	November 4, 2010	
4.7	Waiver to Fifth Amended and Restated Investor's Rights Agreement, dated as of May 22, 2011, between Registrant and certain holders of the Registrant's capital stock named therein.	S-1/A	333-174466	4.2E	June 2, 2011	
4.8	Amendment to Fifth Amended and Restated Investor's Rights Agreement, dated as of May 30, 2011, between Registrant and certain holders of the Registrant's capital stock named therein.	8-K	001-34756	4.1	June 1, 2011	

4.9	Sixth Amendment to Fifth Amended and Restated Investors' Rights Agreement, dated as of May 15, 2013 among the Registrant, the Elon Musk Revocable Trust dated July 22, 2003 and certain other holders of the capital stock of the Registrant named therein.	8-K	001-34756	4.1	May 20, 2013

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Exhibit	Filing Date	
4.10	Waiver to Fifth Amended and Restated Investor's Rights Agreement, dated as of May 14, 2013, between the Registrant and certain holders of the capital stock of the Registrant named therein.	8-K	001-34756	4.2	May 20, 2013	
4.11	Waiver to Fifth Amended and Restated Investor's Rights Agreement, dated as of August 13, 2015, between the Registrant and certain holders of the capital stock of the Registrant named therein.	8-K	001-34756	4.1	August 19, 2015	
4.12	Waiver to Fifth Amended and Restated Investors' Rights Agreement, dated as of May 18, 2016, between the Registrant and certain holders of the capital stock of the Registrant named therein.	8-K	001-34756	4.1	May 24, 2016	
4.13	Waiver to Fifth Amended and Restated Investors' Rights Agreement, dated as of March 15, 2017, between the Registrant and certain holders of the capital stock of the Registrant named therein.	8-K	001-34756	4.1	March 17, 2017	
4.14	Waiver to Fifth Amended and Restated Investors' Rights Agreement, dated as of May 1, 2019, between the Registrant and certain holders of the capital stock of the Registrant named therein.	8-K	001-34756	4.1	May 3, 2019	
4.15	Indenture, dated as of May 22, 2013, by and between the Registrant and U.S. Bank National Association.	8-K	001-34756	4.1	May 22, 2013	
4.16	Third Supplemental Indenture, dated as of March 5, 2014, by and between the Registrant and U.S. Bank National Association.	8-K	001-34756	4.4	March 5, 2014	
4.17	Form of 1.25% Convertible Senior Note Due March 1, 2021 (included in Exhibit 4.16).	8-K	001-34756	4.4	March 5, 2014	
4.18	Fourth Supplemental Indenture, dated as of March 22, 2017, by and between the Registrant and U.S. Bank National Association.	8-K	001-34756	4.2	March 22, 2017	
4.19	Form of 2.375% Convertible Senior Note Due March 15, 2022 (included in Exhibit 4.18).	8-K	001-34756	4.2	March 22, 2017	
4.20	Fifth Supplemental Indenture, dated as of May 7, 2019, by and between Registrant and U.S. Bank National Association, related to 2.00% Convertible Senior Notes due May 15, 2024.	8-K	001-34756	4.2	May 8, 2019	
4.21	Form of 2.00% Convertible Senior Notes due May 15, 2024 (included in Exhibit 4.20).	8-K	001-34756	4.2	May 8, 2019	

4.22	Indenture, dated as of August 18, 2017, by and among the Registrant, SolarCity, and U.S. Bank National Association, as trustee.	8-K	001-34756	4.1	August 23, 2017
4.23	Form of 5.30% Senior Note due August 15, 2025.	8-K	001-34756	4.2	August 23, 2017

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Exhibit	Filing Date	
4.24	Indenture, dated as of October 15, 2014, between SolarCity and U.S. Bank National Association, as trustee.	S-3ASR(1)	333-199321	4.1	October 15, 2014	
4.25	Eighth Supplemental Indenture, dated as of January 29, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.00% Solar Bonds, Series 2015/4-7.	8-K(1)	001-35758	4.5	January 29, 2015	
4.26	Tenth Supplemental Indenture, dated as of March 9, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.00% Solar Bonds, Series 2015/6-10.	8-K(1)	001-35758	4.3	March 9, 2015	
4.27	Eleventh Supplemental Indenture, dated as of March 9, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.75% Solar Bonds, Series 2015/7-15.	8-K(1)	001-35758	4.4	March 9, 2015	
4.28	Fifteenth Supplemental Indenture, dated as of March 19, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C4-10.	8-K(1)	001-35758	4.5	March 19, 2015	
4.29	Sixteenth Supplemental Indenture, dated as of March 19, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C5-15.	8-K(1)	001-35758	4.6	March 19, 2015	
4.30	Twentieth Supplemental Indenture, dated as of March 26, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C9-10.	8-K(1)	001-35758	4.5	March 26, 2015	
4.31	Twenty-First Supplemental Indenture, dated as of March 26, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C10-15.	8-K(1)	001-35758	4.6	March 26, 2015	
4.32	Twenty-Sixth Supplemental Indenture, dated as of April 2, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C14-10.	8-K(1)	001-35758	4.5	April 2, 2015	
4.33	Thirtieth Supplemental Indenture, dated as of April 9, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C19-10.	8-K(1)	001-35758	4.5	April 9, 2015	
4.34	Thirty-First Supplemental Indenture, dated as of April 9, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C20-15.	8-K(1)	001-35758	4.6	April 9, 2015	
4.35	Thirty-Fifth Supplemental Indenture, dated as of April 14, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C24-10.	8-K(1)	001-35758	4.5	April 14, 2015	
4.36	Thirty-Sixth Supplemental Indenture, dated as of April 14, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C25-15.	8-K(1)	001-35758	4.6	April 14, 2015	

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Exhibit	Filing Date	
4.37	Thirty-Eighth Supplemental Indenture, dated as of April 21, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C27-10.	8-K(1)	001-35758	4.3	April 21, 2015	
4.38	Thirty-Ninth Supplemental Indenture, dated as of April 21, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C28-15.	8-K(1)	001-35758	4.4	April 21, 2015	
4.39	Forty-Third Supplemental Indenture, dated as of April 27, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C32-10.	8-K(1)	001-35758	4.5	April 27, 2015	
4.40	Forty-Fourth Supplemental Indenture, dated as of April 27, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C33-15.	8-K(1)	001-35758	4.6	April 27, 2015	
4.41	Forty-Eighth Supplemental Indenture, dated as of May 1, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.00% Solar Bonds, Series 2015/12-10.	8-K(1)	001-35758	4.5	May 1, 2015	
4.42	Forty-Ninth Supplemental Indenture, dated as of May 1, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.75% Solar Bonds, Series 2015/13-15.	8-K(1)	001-35758	4.6	May 1, 2015	
4.43	Fifty-Second Supplemental Indenture, dated as of May 11, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C36-10.	8-K(1)	001-35758	4.4	May 11, 2015	
4.44	Fifty-Third Supplemental Indenture, dated as of May 11, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C37-15.	8-K(1)	001-35758	4.5	May 11, 2015	
4.45	Fifty-Seventh Supplemental Indenture, dated as of May 18, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C40-10.	8-K(1)	001-35758	4.4	May 18, 2015	
4.46	Fifty-Eighth Supplemental Indenture, dated as of May 18, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C41-15.	8-K(1)	001-35758	4.5	May 18, 2015	
4.47	Sixty-First Supplemental Indenture, dated as of May 26, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C44-10.	8-K(1)	001-35758	4.4	May 26, 2015	
4.48	Sixty-Second Supplemental Indenture, dated as of May 26, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C45-15.	8-K(1)	001-35758	4.5	May 26, 2015	

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Exhibit	Filing Date	
4.49	Seventieth Supplemental Indenture, dated as of June 16, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C52-10.	8-K(1)	001-35758	4.4	June 16, 2015	
4.50	Seventy-First Supplemental Indenture, dated as of June 16, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C53-15.	8-K(1)	001-35758	4.5	June 16, 2015	
4.51	Seventy-Fourth Supplemental Indenture, dated as of June 22, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C56-10.	8-K(1)	001-35758	4.4	June 23, 2015	
4.52	Seventy-Fifth Supplemental Indenture, dated as of June 22, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C57-15.	8-K(1)	001-35758	4.5	June 23, 2015	
4.53	Eightieth Supplemental Indenture, dated as of June 29, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C61-10.	8-K(1)	001-35758	4.5	June 29, 2015	
4.54	Eighty-First Supplemental Indenture, dated as of June 29, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C62-15.	8-K(1)	001-35758	4.6	June 29, 2015	
4.55	Ninetieth Supplemental Indenture, dated as of July 20, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C71-10.	8-K(1)	001-35758	4.5	July 21, 2015	
4.56	Ninety-First Supplemental Indenture, dated as of July 20, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C72-15.	8-K(1)	001-35758	4.6	July 21, 2015	
4.57	Ninety-Fifth Supplemental Indenture, dated as of July 31, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.00% Solar Bonds, Series 2015/20-10.	8-K(1)	001-35758	4.5	July 31, 2015	
4.58	Ninety-Sixth Supplemental Indenture, dated as of July 31, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.75% Solar Bonds, Series 2015/21-15.	8-K(1)	001-35758	4.6	July 31, 2015	
4.59	One Hundred-and-Fifth Supplemental Indenture, dated as of August 10, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C81-10.	8-K(1)	001-35758	4.5	August 10, 2015	
4.60	One Hundred-and-Eleventh Supplemental Indenture, dated as of August 17, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C87-15.	8-K(1)	001-35758	4.6	August 17, 2015	

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Exhibit	Filing Date	
4.61	One Hundred-and-Sixteenth Supplemental Indenture, dated as of August 24, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C92-15.	8-K(1)	001-35758	4.6	August 24, 2015	
4.62	One Hundred-and-Twenty-First Supplemental Indenture, dated as of August 31, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C97-15.	8-K(1)	001-35758	4.6	August 31, 2015	
4.63	One Hundred-and-Twenty-Eighth Supplemental Indenture, dated as of September 14, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C101-10.	8-K(1)	001-35758	4.5	September 15, 2015	
4.64	One Hundred-and-Twenty-Ninth Supplemental Indenture, dated as of September 14, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C102-15.	8-K(1)	001-35758	4.6	September 15, 2015	
4.65	One Hundred-and-Thirty-Third Supplemental Indenture, dated as of September 28, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C106-10.	8-K(1)	001-35758	4.5	September 29, 2015	
4.66	One Hundred-and-Thirty-Fourth Supplemental Indenture, dated as of September 28, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C107-15.	8-K(1)	001-35758	4.6	September 29, 2015	
4.67	One Hundred-and-Thirty-Eighth Supplemental Indenture, dated as of October 13, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C111-10.	8-K(1)	001-35758	4.5	October 13, 2015	
4.68	One Hundred-and-Forty-Third Supplemental Indenture, dated as of October 30, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.00% Solar Bonds, Series 2015/25-10.	8-K(1)	001-35758	4.5	October 30, 2015	
4.69	One Hundred-and-Forty-Fourth Supplemental Indenture, dated as of October 30, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.75% Solar Bonds, Series 2015/26-15.	8-K(1)	001-35758	4.6	October 30, 2015	
4.70	One Hundred-and-Forty-Eighth Supplemental Indenture, dated as of November 4, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C116-10.	8-K(1)	001-35758	4.5	November 4, 2015	

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Exhibit	Filing Date	
4.71	One Hundred-and-Fifty-Third Supplemental Indenture, dated as of November 16, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C121-10.	8-K(1)	001-35758	4.5	November 17, 2015	
4.72	One Hundred-and-Fifty-Fourth Supplemental Indenture, dated as of November 16, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C122-15.	8-K(1)	001-35758	4.6	November 17, 2015	
4.73	One Hundred-and-Fifty-Eighth Supplemental Indenture, dated as of November 30, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C126-10.	8-K(1)	001-35758	4.5	November 30, 2015	
4.74	One Hundred-and-Fifty-Ninth Supplemental Indenture, dated as of November 30, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C127-15.	8-K(1)	001-35758	4.6	November 30, 2015	
4.75	One Hundred-and-Sixty-Third Supplemental Indenture, dated as of December 14, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C131-10.	8-K(1)	001-35758	4.5	December 14, 2015	
4.76	One Hundred-and-Sixty-Fourth Supplemental Indenture, dated as of December 14, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C132-15.	8-K(1)	001-35758	4.6	December 14, 2015	
4.77	One Hundred-and-Sixty-Eighth Supplemental Indenture, dated as of December 28, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C136-10.	8-K(1)	001-35758	4.5	December 28, 2015	
4.78	One Hundred-and-Sixty-Ninth Supplemental Indenture, dated as of December 28, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C137-15.	8-K(1)	001-35758	4.6	December 28, 2015	
4.79	One Hundred-and-Seventy-Third Supplemental Indenture, dated as of January 29, 2016, by and between SolarCity and the Trustee, related to SolarCity's 5.00% Solar Bonds, Series 2016/4-10.	8-K(1)	001-35758	4.5	January 29, 2016	
4.80	One Hundred-and-Seventy-Fourth Supplemental Indenture, dated as of January 29, 2016, by and between SolarCity and the Trustee, related to SolarCity's 5.75% Solar Bonds, Series 2016/5-15.	8-K(1)	001-35758	4.6	January 29, 2016	

4.81	Description of Registrant's Securities	10-K	001-34756	4.119	February 13, 2020	

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Exhibit	Filing Date	
10.1**	Form of Indemnification Agreement between the Registrant and its directors and officers.	S-1/A	333-164593	10.1	June 15, 2010	
10.2**	2003 Equity Incentive Plan.	S-1/A	333-164593	10.2	May 27, 2010	
10.3**	Form of Stock Option Agreement under 2003 Equity Incentive Plan.	S-1	333-164593	10.3	January 29, 2010	
10.4**	Amended and Restated 2010 Equity Incentive Plan.	10-K	001-34756	10.4	February 23, 2018	
10.5**	Form of Stock Option Agreement under 2010 Equity Incentive Plan.	10-K	001-34756	10.6	March 1, 2017	
10.6**	Form of Restricted Stock Unit Award Agreement under 2010 Equity Incentive Plan.	10-K	001-34756	10.7	March 1, 2017	
10.7**	Amended and Restated 2010 Employee Stock Purchase Plan, effective as of February 1, 2017.	10-K	001-34756	10.8	March 1, 2017	
10.8**	2019 Equity Incentive Plan.	S-8	333-232079	4.2	June 12, 2019	
10.9**	Form of Stock Option Agreement under 2019 Equity Incentive Plan.	S-8	333-232079	4.3	June 12, 2019	
10.10**	Form of Restricted Stock Unit Award Agreement under 2019 Equity Incentive Plan.	S-8	333-232079	4.4	June 12, 2019	
10.11**	Employee Stock Purchase Plan, effective as of June 12, 2019.	S-8	333-232079	4.5	June 12, 2019	
10.12**	2007 SolarCity Stock Plan and form of agreements used thereunder.	S-1(1)	333-184317	10.2	October 5, 2012	
10.13**	2012 SolarCity Equity Incentive Plan and form of agreements used thereunder.	S-1(1)	333-184317	10.3	October 5, 2012	
10.14**	2010 Zep Solar, Inc. Equity Incentive Plan and form of agreements used thereunder.	S-8(1)	333-192996	4.5	December 20, 2013	
10.15**	Offer Letter between the Registrant and Elon Musk dated October 13, 2008.	S-1	333-164593	10.9	January 29, 2010	
10.16**	Performance Stock Option Agreement between the Registrant and Elon Musk dated January 21, 2018.	DEF 14A	001-34756	Appendix A	February 8, 2018	
10.17**	Maxwell Technologies, Inc. 2005 Omnibus Equity Incentive Plan, as amended through May 6, 2010	8-K(2)	001-15477	10.1	May 10, 2010	

10.18**	Maxwell Technologies, Inc. 2013 Omnibus Equity Incentive Plan	DEF 14A(2)	001-15477	Appendix A	June 2, 2017
10.19	Indemnification Agreement, effective as of June 23, 2020, between Registrant and Elon R. Musk.	10-Q	001-34756	10.4	July 28, 2020
10.20	Indemnification Agreement, dated as of February 27, 2014, by and between the Registrant and J.P. Morgan Securities LLC.	8-K	001-34756	10.1	March 5, 2014
10.21	Form of Call Option Confirmation relating to 1.25% Convertible Senior Notes Due March 1, 2021.	8-K	001-34756	10.3	March 5, 2014

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Exhibit	Filing Date	
10.22	Form of Warrant Confirmation relating to 1.25% Convertible Senior Notes Due March 1, 2021.	8-K	001-34756	10.5	March 5, 2014	
10.23	Form of Call Option Confirmation relating to 2.375% Convertible Notes due March 15, 2022.	8-K	001-34756	10.1	March 22, 2017	
10.24	Form of Warrant Confirmation relating to 2.375% Convertible Notes due March 15, 2022.	8-K	001-34756	10.2	March 22, 2017	
10.25	Form of Call Option Confirmation relating to 2.00% Convertible Senior Notes due May 15, 2024.	8-K	001-34756	10.1	May 3, 2019	
10.26	Form of Warrant Confirmation relating to 2.00% Convertible Senior Notes due May 15, 2024.	8-K	001-34756	10.2	May 3, 2019	
10.27†	Supply Agreement between Panasonic Corporation and the Registrant dated October 5, 2011.	10-K	001-34756	10.50	February 27, 2012	
10.28†	Amendment No. 1 to Supply Agreement between Panasonic Corporation and the Registrant dated October 29, 2013.	10-K	001-34756	10.35A	February 26, 2014	
10.29	Agreement between Panasonic Corporation and the Registrant dated July 31, 2014.	10-Q	001-34756	10.1	November 7, 2014	
10.30†	General Terms and Conditions between Panasonic Corporation and the Registrant dated October 1, 2014.	8-K	001-34756	10.2	October 11, 2016	
10.31	Letter Agreement, dated as of February 24, 2015, regarding addition of co-party to General Terms and Conditions, Production Pricing Agreement and Investment Letter Agreement between Panasonic Corporation and the Registrant.	10-K	001-34756	10.25A	February 24, 2016	
10.32†	Amendment to Gigafactory General Terms, dated March 1, 2016, by and among the Registrant, Panasonic Corporation and Panasonic Energy Corporation of North America.	8-K	001-34756	10.1	October 11, 2016	
10.33††	Amended and Restated General Terms and Conditions for Gigafactory, entered into on June 10, 2020, by and among Registrant, Tesla Motors Netherlands B.V., Panasonic Corporation and Panasonic Corporation of North America.	10-Q	001-34756	10.2	July 28, 2020	
10.34†	Production Pricing Agreement between Panasonic Corporation and the Registrant dated October 1, 2014.	10-Q	001-34756	10.3	November 7, 2014	
10.35†	Investment Letter Agreement between Panasonic Corporation and the Registrant dated October 1, 2014.	10-Q	001-34756	10.4	November 7, 2014	

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Exhibit	Filing Date	
10.36	Amendment to Gigafactory Documents, dated April 5, 2016, by and among the Registrant, Panasonic Corporation, Panasonic Corporation of North America and Panasonic Energy Corporation of North America.	10-Q	001-34756	10.2	May 10, 2016	
10.37††	2019 Pricing Agreement (Japan Cells) with respect to 2011 Supply Agreement, executed September 20, 2019, by and among the Registrant, Tesla Motors Netherlands B.V., Panasonic Corporation and SANYO Electric Co., Ltd.	10-Q	001-34756	10.6	October 29, 2019	
10.38††	2020 Pricing Agreement (Gigafactory 2170 Cells), entered into on June 9, 2020, by and among Registrant, Tesla Motors Netherlands B.V., Panasonic Corporation and Panasonic Corporation of North America.	10-Q	001-34756	10.3	July 28, 2020	
10.39††	2021 Pricing Agreement (Japan Cells) with respect to 2011 Supply Agreement, executed December 29, 2020, by and among the Registrant, Tesla Motors Netherlands B.V., Panasonic Corporation of North America and SANYO Electric Co., Ltd.	10-K	001-34756	10.39	February 8, 2021	
10.40††	Amended and Restated Factory Lease, executed as of March 26, 2019, by and between the Registrant and Panasonic Energy North America, a division of Panasonic Corporation of North America, as tenant.	10-Q	001-34756	10.3	July 29, 2019	
10.41††	Lease Amendment, executed September 20, 2019, by and among the Registrant, Panasonic Corporation of North America, on behalf of its division Panasonic Energy of North America, with respect to the Amended and Restated Factory Lease, executed as of March 26, 2019.	10-Q	001-34756	10.7	October 29, 2019	
10.42††	Second Lease Amendment, entered into on June 9, 2020, by and between the Registrant and Panasonic Energy of North America, a division of Panasonic Corporation of North America, with respect to the Amended and Restated Factory Lease dated January 1, 2017.	10-Q	001-34756	10.1	July 28, 2020	
10.43	Amendment and Restatement in respect of ABL Credit Agreement, dated as of March 6, 2019, by and among certain of the Registrant's and Tesla Motors Netherlands B.V.'s direct or indirect subsidiaries from time to time party thereto, as borrowers, Wells Fargo Bank, National Association, as documentation agent, JPMorgan Chase Bank, N.A., Goldman Sachs Bank USA, Morgan Stanley Senior Funding Inc. and Bank of America, N.A., as syndication agents, the lenders from time to time party thereto, and Deutsche Bank AG New York Branch, as	S-4/A	333-229749	10.68	April 3, 2019	

administrative agent and collateral agent.

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Exhibit	Filing Date	
10.44	First Amendment to Amended and Restated ABL Credit Agreement, dated as of December 23, 2020, in respect of the Amended and Restated ABL Credit Agreement, dated as of March 6, 2019, by and among certain of the Registrant's and Tesla Motors Netherlands B.V.'s direct or indirect subsidiaries from time to time party thereto, as borrowers, Wells Fargo Bank, National Association, as documentation agent, JPMorgan Chase Bank, N.A., Goldman Sachs Bank USA, Morgan Stanley Senior Funding Inc. and Bank of America, N.A., as syndication agents, the lenders from time to time party thereto, and Deutsche Bank AG New York Branch, as administrative agent and collateral agent.	10-K	001-34756	10.44	February 8, 2021	
10.45†	Agreement for Tax Abatement and Incentives, dated as of May 7, 2015, by and between Tesla Motors, Inc. and the State of Nevada, acting by and through the Nevada Governor's Office of Economic Development.	10-Q	001-34756	10.1	August 7, 2015	
10.46††	Second Amended and Restated Loan and Security Agreement, dated as of August 28, 2020, by and among Tesla 2014 Warehouse SPV LLC, Tesla Finance LLC, the Lenders and Group Agents from time to time party thereto, Deutsche Bank Trust Company Americas, as Paying Agent, and Deutsche Bank AG, New York Branch, as Administrative Agent.	10-Q	001-34756	10.2	October 26, 2020	
10.47	Amendment No. 1 to Second Amended and Restated Loan and Security Agreement, dated as of March 15, 2021, by and among Tesla 2014 Warehouse SPV LLC, Tesla Finance LLC, the Lenders and Group Agents from time to time party thereto, Deutsche Bank Trust Company Americas, as Paying Agent, and Deutsche Bank AG, New York Branch, as Administrative Agent.	10-Q	001-34756	10.1	April 28, 2021	
10.48††	Amendment No. 2 to Second Amended and Restated Loan and Security Agreement, dated as of June 8, 2021, by and among Tesla 2014 Warehouse SPV LLC, Tesla Finance LLC, the Lenders and Group Agents from time to time party thereto, Deutsche Bank Trust Company Americas, as Paying Agent, and Deutsche Bank AG, New York Branch, as Administrative Agent.	10-Q	001-34756	10.1	July 27, 2021	

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Exhibit	Filing Date	
10.49†	Loan and Security Agreement, executed on December 28, 2018, by and among LML 2018 Warehouse SPV, LLC, Tesla Finance LLC, the Lenders and Group Agents from time to time party thereto, Deutsche Bank Trust Company Americas, as Paying Agent, and Deutsche Bank AG, New York Branch, as Administrative Agent.	10-K	001-34756	10.55	February 19, 2019	
10.50††	Letter of Consent, dated as of June 14, 2019, by and among LML 2018 Warehouse SPV, LLC, Deutsche Bank AG, New York Branch, as Administrative Agent, and the Group Agents party thereto, in respect of the Loan and Security Agreement, dated as of August 17, 2017 and as amended from time to time, by and among LML Warehouse SPV, LLC, Tesla Finance LLC, and the Lenders, Group Agents and Administrative Agent from time to time party thereto.	10-Q	001-34756	10.1	July 29, 2019	
10.51††	Amendment No. 1 to Loan and Security Agreement, dated as of August 16, 2019, by and among LML 2018 Warehouse SPV, LLC, Deutsche Bank Trust Company Americas, as Paying Agent, and Deutsche Bank AG, New York Branch, as Administrative Agent, and the Lenders and Group Agents from time to time party thereto.	10-Q	001-34756	10.2	October 29, 2019	
10.52	Amendment No. 2 to Loan and Security Agreement, dated as of December 13, 2019, by and among LML 2018 Warehouse SPV, LLC, Deutsche Bank Trust Company Americas, as Paying Agent, and Deutsche Bank AG, New York Branch, as Administrative Agent, and the Lenders and Group Agents from time to time party thereto.	10-K	001-34756	10.69	February 13, 2020	

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Exhibit	Filing Date	
10.53	Letter of Consent, dated February 18, 2020, by and among LML 2018 Warehouse SPV, LLC, Tesla 2014 Warehouse SPV LLC, LLC and Deutsche Bank AG, New York Branch, as Administrative Agent and as Group Agent under the 2018 Loan Agreement and the 2014 Loan Agreement, and the Group Agents party thereto, in respect of (i) the Loan and Security Agreement, dated December 27, 2018 and as amended from time to time, among LML 2018 Warehouse SPV, LLC, Tesla Finance LLC, Deutsche Bank Trust Company Americans, as Paying Agent, Deutsche Bank AG, New York Branch, as Administrative Agent, the lenders parties and agent parties thereto, and (ii) the Amended and Restated Loan and Security Agreement, dated August 17, 2017 and as amended from time to time, among Tesla 2014 Warehouse SPV LLC, Tesla Finance LLC, the lenders and group agents party thereto, Deutsche Bank Trust Company Americas, as Paying Agent, and Deutsche Bank AG, New York Branch, as Administrative Agent.	10-Q	001-34756	10.1	April 30, 2020	
10.54††	Letter of Consent, dated as of August 14, 2020, by and among LML 2018 Warehouse SPV, LLC, Tesla 2014 Warehouse SPV LLC, Deutsche Bank AG, New York Branch, as Administrative Agent and Group Agent, and the Group Agents party thereto, in respect of (i) the Loan and Security Agreement, dated as of December 27, 2018 and as amended from time to time, by and among LML 2018 Warehouse SPV, LLC, Tesla Finance LLC, and the Lenders, Group Agents, Paying Agent and Administrative Agent from time to time party thereto, and (ii) the Amended and Restated Loan and Security Agreement, dated as of August 17, 2017 and as amended from time to time, by and among LML Warehouse SPV, LLC, Tesla Finance LLC, and the Lenders, Group Agents and Administrative Agent from time to time party thereto.	10-Q	001-34756	10.1	October 26, 2020	
10.55	Payoff and Termination Letter, executed on August 28, 2020, by and among LML 2018 Warehouse SPV, LLC, the Lenders and Group Agents from time to time party thereto, Deutsche Bank Trust Company Americas, as Paying Agent and Deutsche Bank AG, New York Branch, as Administrative Agent, relating to Loan and Security Agreement.	10-Q	001-34756	10.3	October 26, 2020	
10.56	Purchase Agreement, dated as of August 11, 2017, by and among the Registrant, SolarCity and Goldman Sachs & Co. LLC and Morgan Stanley & Co. LLC as representatives of the several initial purchasers named therein.	8-K	001-34756	10.1	August 23, 2017	

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Exhibit	Filing Date	
10.57	Amended and Restated Agreement For Research & Development Alliance on Triex Module Technology, effective as of September 2, 2014, by and between The Research Foundation For The State University of New York, on behalf of the College of Nanoscale Science and Engineering of the State University of New York, and Silevo, Inc.	10-Q(1)	001-35758	10.16	November 6, 2014	
10.58	First Amendment to Amended and Restated Agreement For Research & Development Alliance on Triex Module Technology, effective as of October 31, 2014, by and between The Research Foundation For The State University of New York, on behalf of the College of Nanoscale Science and Engineering of the State University of New York, and Silevo, Inc.	10-K(1)	001-35758	10.16a	February 24, 2015	
10.59	Second Amendment to Amended and Restated Agreement For Research & Development Alliance on Triex Module Technology, effective as of December 15, 2014, by and between The Research Foundation For The State University of New York, on behalf of the College of Nanoscale Science and Engineering of the State University of New York, and Silevo, Inc.	10-K(1)	001-35758	10.16b	February 24, 2015	
10.60	Third Amendment to Amended and Restated Agreement For Research & Development Alliance on Triex Module Technology, effective as of February 12, 2015, by and between The Research Foundation For The State University of New York, on behalf of the College of Nanoscale Science and Engineering of the State University of New York, and Silevo, Inc.	10-Q(1)	001-35758	10.16c	May 6, 2015	
10.61	Fourth Amendment to Amended and Restated Agreement For Research & Development Alliance on Triex Module Technology, effective as of March 30, 2015, by and between The Research Foundation For The State University of New York, on behalf of the College of Nanoscale Science and Engineering of the State University of New York, and Silevo, Inc.	10-Q(1)	001-35758	10.16d	May 6, 2015	
10.62	Fifth Amendment to Amended and Restated Agreement For Research & Development Alliance on Triex Module Technology, effective as of June 30, 2015, by and between The Research Foundation For The State University of New York, on behalf of the College of Nanoscale Science and Engineering of the State University of New York, and Silevo, LLC.	10-Q(1)	001-35758	10.16e	July 30, 2015	

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Exhibit	Filing Date	
10.63	Sixth Amendment to Amended and Restated Agreement For Research & Development Alliance on Triex Module Technology, effective as of September 1, 2015, by and between The Research Foundation For The State University of New York, on behalf of the College of Nanoscale Science and Engineering of the State University of New York, and Silevo, LLC.	10-Q(1)	001-35758	10.16f	October 30, 2015	
10.64	Seventh Amendment to Amended and Restated Agreement For Research & Development Alliance on Triex Module Technology, effective as of October 9, 2015, by and between The Research Foundation For The State University of New York, on behalf of the College of Nanoscale Science and Engineering of the State University of New York, and Silevo, LLC.	10-Q(1)	001-35758	10.16g	October 30, 2015	
10.65	Eighth Amendment to Amended and Restated Agreement For Research & Development Alliance on Triex Module Technology, effective as of October 26, 2015, by and between The Research Foundation For The State University of New York, on behalf of the College of Nanoscale Science and Engineering of the State University of New York, and Silevo, LLC.	10-Q(1)	001-35758	10.16h	October 30, 2015	
10.66	Ninth Amendment to Amended and Restated Agreement For Research & Development Alliance on Triex Module Technology, effective as of December 9, 2015, by and between The Research Foundation For The State University of New York, on behalf of the College of Nanoscale Science and Engineering of the State University of New York, and Silevo, LLC.	10-K(1)	001-35758	10.16i	February 10, 2016	
10.67	Tenth Amendment to Amended and Restated Agreement For Research & Development Alliance on Triex Module Technology, effective as of March 31, 2017, by and between The Research Foundation For The State University of New York, on behalf of the Colleges of Nanoscale Science and Engineering of the State University of New York, and Silevo, LLC.	10-Q	001-34756	10.8	May 10, 2017	
10.68	Eleventh Amendment to Amended and Restated Agreement for Research & Development Alliance on Triex Module Technology, effective as of July 22, 2020, among the Research Foundation for the State University of New York, Silevo, LLC and Tesla Energy Operations, Inc.	10-Q	001-34756	10.6	July 28, 2020	

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Exhibit	Filing Date	
10.69	Twelfth Amendment to Amended and Restated Agreement for Research & Development Alliance on Triex Module Technology, effective as of May 1, 2021, among the Research Foundation for the State University of New York, Silevo, LLC and Tesla Energy Operations, Inc.	10-Q	001-34756	10.1	October 25, 2021	
10.70††	Grant Contract for State-Owned Construction Land Use Right, dated as of October 17, 2018, by and between Shanghai Planning and Land Resource Administration Bureau, as grantor, and Tesla (Shanghai) Co., Ltd., as grantee (English translation).	10-Q	001-34756	10.2	July 29, 2019	
10.71††	Facility Agreement, dated as of September 26, 2019, by and between China Merchants Bank Co., Ltd. Beijing Branch and Tesla Automobile (Beijing) Co., Ltd. (English translation).	10-Q	001-34756	10.3	October 29, 2019	
10.72††	Statement Letter to China Merchants Bank Co., Ltd. Beijing Branch from Tesla Automobile (Beijing) Co., Ltd., dated as of September 26, 2019 (English translation).	10-Q	001-34756	10.4	October 29, 2019	
10.73††	Fixed Asset Syndication Loan Agreement, dated as of December 18, 2019, by and among Tesla (Shanghai) Co., Ltd., China Construction Bank Corporation, China (Shanghai) Pilot Free Trade Zone Special Area Branch, Agricultural Bank of China Shanghai Changning Sub-branch, Shanghai Pudong Development Bank Co., Ltd., Shanghai Branch, and Industrial and Commercial Bank of China Limited, China (Shanghai) Pilot Free Trade Zone Special Area Branch (English translation).	10-K	001-34756	10.85	February 13, 2020	
10.74††	Fixed Asset Syndication Loan Agreement and Supplemental Agreement, dated as of December 18, 2019, by and among Tesla (Shanghai) Co., Ltd., China Construction Bank Corporation, China (Shanghai) Pilot Free Trade Zone Special Area Branch, Agricultural Bank of China Shanghai Changning Sub-branch, Shanghai Pudong Development Bank Co., Ltd., Shanghai Branch, and Industrial and Commercial Bank of China Limited, China (Shanghai) Pilot Free Trade Zone Special Area Branch (English translation).	10-K	001-34756	10.86	February 13, 2020	

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Exhibit	Filing Date	
10.75††	Syndication Revolving Loan Agreement, dated as of December 18, 2019, by and among Tesla (Shanghai) Co., Ltd. China Construction Bank Corporation, China (Shanghai) Pilot Free Trade Zone Special Area Branch, Agricultural Bank of China Shanghai Changning Sub-branch, Shanghai Pudong Development Bank Co., Ltd., Shanghai Branch, and Industrial and Commercial Bank of China Limited, China (Shanghai) Pilot Free Trade Zone Special Area Branch (English translation).	10-K	001-34756	10.87	February 13, 2020	
10.76††	Working Capital Loan Contact, dated as of May 7, 2020, between Industrial and Commercial Bank of China, China (Shanghai) Pilot Free Trade Zone Lingang Special Area Branch and Tesla (Shanghai) Co., Ltd.	10-Q	001-34756	10.5	July 28, 2020	
21.1	List of Subsidiaries of the Registrant	—	—	—	—	X
23.1	Consent of PricewaterhouseCoopers LLP, Independent Registered Public Accounting Firm	—	—	—	—	X
31.1	Rule 13a-14(a) / 15(d)-14(a) Certification of Principal Executive Officer	—	—	—	—	X
31.2	Rule 13a-14(a) / 15(d)-14(a) Certification of Principal Financial Officer	—	—	—	—	X
32.1*	Section 1350 Certifications	—	—	—	—	X
101.INS	Inline XBRL Instance Document	—	—	—	—	X
101.SCH	Inline XBRL Taxonomy Extension Schema Document	—	—	—	—	X
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document.	—	—	—	—	X
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document	—	—	—	—	X
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document	—	—	—	—	X
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document	—	—	—	—	X

104	Cover Page Interactive Data File (formatted as inline XBRL with applicable taxonomy extension information contained in Exhibits 101)

* Furnished herewith
** Indicates a management contract or compensatory plan or arrangement
† Confidential treatment has been requested for portions of this exhibit
†† Portions of this exhibit have been redacted in compliance with Regulation S-K Item 601(b)(10).
(1) Indicates a filing of SolarCity
(2) Indicates a filing of Maxwell Technologies, Inc.

ITEM 16. SUMMARY

None

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) 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.

Tesla, Inc.

Date: February 4, 2022

/s/ Elon Musk
Elon Musk
Chief Executive Officer
(Principal Executive Officer)

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

Signature	Title	Date
/s/ Elon Musk Elon Musk	Chief Executive Officer and Director (Principal Executive Officer)	February 4, 2022
/s/ Zachary J. Kirkhorn Zachary J. Kirkhorn	Chief Financial Officer (Principal Financial Officer)	February 4, 2022
/s/ Vaibhav Taneja Vaibhav Taneja	Chief Accounting Officer (Principal Accounting Officer)	February 4, 2022
/s/ Robyn Denholm Robyn Denholm	Director	February 4, 2022
/s/ Ira Ehrenpreis Ira Ehrenpreis	Director	February 4, 2022
/s/ Lawrence J. Ellison Lawrence J. Ellison	Director	February 4, 2022
/s/ Hiromichi Mizuno Hiromichi Mizuno	Director	February 4, 2022
/s/ James Murdoch James Murdoch	Director	February 4, 2022
/s/ Kimbal Musk Kimbal Musk	Director	February 4, 2022
/s/ Kathleen Wilson-Thompson Kathleen Wilson-Thompson	Director	February 4, 2022