



Tesla Motors, Inc. Annual Report 2019

Form 10-K (NASDAQ:TSLA)

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**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, 2018

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
(State or other jurisdiction of
incorporation or organization)

3500 Deer Creek Road
Palo Alto, California
(Address of principal executive offices)

91-2197729
(I.R.S. Employer
Identification No.)

94304
(Zip Code)

(650) 681-5000

(Registrant's telephone number, including area code)

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

Title of each class

Name of each exchange on which registered

Common Stock, \$0.001 par value

The NASDAQ Stock Market LLC

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 if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

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 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, 2018, the last day of the registrant's most recently completed second fiscal quarter, was \$46.57 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, 2018). 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 February 12, 2019, there were 172,721,487 shares of the registrant's Common Stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Proxy Statement for the 2019 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, 2018.

TESLA, INC.

ANNUAL REPORT ON FORM 10-K FOR THE YEAR ENDED DECEMBER 31, 2018

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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 our strategy, future operations, 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. We do not assume any obligation to update any forward-looking statements.

PART I

ITEM 1. BUSINESS

Overview

We design, develop, manufacture and sell high-performance fully electric vehicles (“EVs”) and energy generation and storage systems, and also install and maintain such energy systems and sell solar electricity. We are the world’s first vertically integrated sustainable energy company, offering end-to-end clean energy products, including generation, storage and consumption. We have established and continue to grow a global network of stores, galleries, vehicle service centers, Mobile Service technicians, body shops, Supercharger stations and Destination Chargers to accelerate the widespread adoption of our products, and we continue to develop self-driving capability in order to improve vehicle safety. Our sustainable energy products, engineering expertise, intense focus to accelerate the world’s transition to sustainable energy, and business model differentiate us from other companies.

We currently produce and sell three fully electric vehicles: the Model S sedan, the Model X sport utility vehicle (“SUV”) and the Model 3 sedan. All of our vehicles offer high performance and functionality as well as attractive styling.

We commenced deliveries of Model S in June 2012 and have continued to improve Model S by introducing performance, all-wheel drive dual motor, and Autopilot options, as well as free over-the-air software updates. We commenced deliveries of Model X in September 2015. Model X offers seating for up to seven people, all-wheel drive, and our Autopilot functionality. We commenced deliveries of Model 3, a lower-priced sedan designed for the mass market, in July 2017, and we have significantly ramped its production. We are now embarking on the delivery of Model 3 in international markets and are focusing on lowering manufacturing costs while continuing to increase its production rate.

We also intend to bring additional all-electric vehicles to market in the future, including Model Y, the Tesla Semi truck, a pickup truck and a new version of the Tesla Roadster. The production of fully electric vehicles that meet consumers’ range and performance expectations requires substantial design, engineering, and integration work on almost every system of our vehicles. Our design and vehicle engineering capabilities, combined with the technical advancements of our powertrain system, have enabled us to design and develop electric vehicles that we believe overcome the design, styling, and performance issues that have historically limited broad adoption of electric vehicles. As a result, our customers enjoy several benefits, including:

- *Long Range and Recharging Flexibility.* Our vehicles offer ranges that significantly exceed those of any other commercially available electric vehicle. In addition, our vehicles incorporate our proprietary on-board charging system, permitting recharging from almost any available electrical outlet, and also offer fast charging capability from our proprietary Supercharger network.
- *High-Performance Without Compromised Design or Functionality.* Our vehicles deliver instantaneous and sustained acceleration, an advanced Autopilot system with active safety and convenience features, and over-the-air software updates.
- *Energy Efficiency and Cost of Ownership.* Our vehicles offer an attractive cost of ownership compared to internal combustion engine or hybrid electric vehicles. Using only an electric powertrain enables us to create more energy-efficient vehicles that are mechanically simpler than currently available hybrid or internal combustion engine vehicles. The cost to charge our vehicles is less compared to fueling internal combustion vehicles. We also expect our electric vehicles will have lower relative maintenance costs than other vehicles due to fewer moving parts and the absence of certain components, including oil, oil filters, spark plugs and engine valves.

We sell our vehicles through our own sales and service network which we are continuing to grow globally. The benefits we receive from distribution ownership enable us to improve the overall customer experience, the speed of product development and the capital efficiency of our business. We are also continuing to build our network of Superchargers and Destination Chargers in North America, Europe and Asia to provide alternative convenient options for fast charging.

In addition, we are leveraging our technological expertise in batteries, power electronics, and integrated systems to manufacture and sell energy storage products. In late 2016, we began production and deliveries of our latest generation energy storage products, Powerwall 2 and Powerpack 2. Powerwall 2 is a 14 kilowatt hour (“kWh”) home battery with an integrated inverter. Powerpack 2 is an infinitely scalable energy storage system for commercial, industrial and utility applications, comprised of up to 210 kWh (AC) battery packs and up to 650 kVa (at 480V) inverters. Similar to our electric vehicles, our energy storage products have been developed to receive over-the-air firmware and software updates that enable additional features over time.

Finally, we sell and lease solar energy systems (with or without accompanying energy storage systems) to residential and commercial customers and sell renewable energy to residential and commercial customers at prices that are typically below utility rates. Since 2006, we have installed solar energy systems for hundreds of thousands of customers. However, the electricity produced by our solar installations represents a very small fraction of total U.S. electricity generation. With tens of millions of single-family homes and businesses in our primary service territories, and many more in other locations, we have a large opportunity to expand and grow this business. We believe that residential solar energy generation is gaining momentum, as exemplified in part by the state of California recently requiring that new homes be built with solar generation starting in 2020. We also intend to ramp production of our innovative Solar Roof product.

We manufacture our vehicle products primarily at our facilities in Fremont, California, Lathrop, California, Tilburg, Netherlands and at our Gigafactory 1 near Reno, Nevada. We manufacture our energy storage products at Gigafactory 1 and Tesla solar products at our U.S. facilities including in Buffalo, New York (Gigafactory 2). In January 2019, we began construction of our Gigafactory Shanghai in China, where we intend to commence production of certain trims of Model 3 for the local market by the end of 2019.

Our Products and Services

Vehicles

Model S

Model S is a fully electric, four-door, five-adult passenger sedan that offers compelling range and high performance and our all-wheel drive dual motor system, which we also offer in a performance version. Model S 100D is the longest range all-electric production sedan in the world, and the performance version with the Ludicrous speed upgrade is the quickest accelerating production vehicle available.

Model S introduced a 17 inch touch screen driver interface, our advanced Autopilot hardware to enable both active safety and convenience features, and over-the-air software updates. We believe the combination of performance, safety, styling, convenience and energy efficiency of Model S positions it as a compelling alternative to other vehicles in the luxury and performance segments.

Model X

Model X is the longest range all-electric production sport utility vehicle in the world, and offers high performance features such as our fully electric, all-wheel drive dual motor system and our Autopilot system. Model X can seat up to seven adults and incorporates a unique falcon wing door system for easy access to the second and third seating rows. Model X is sold in all markets where Model S is available.

Model 3

Model 3 is our third generation electric vehicle, which we began delivering in July 2017. Model 3 and its drive units are currently produced at high volumes at the Tesla Factory in Fremont, California and at Gigafactory 1, respectively, and we intend to begin production of certain vehicle trims for China at our Gigafactory Shanghai by the end of 2019. We have offered a number of variants of Model 3, including performance, dual motor, single motor, long-range and medium-range, and intend to offer in the future a variant of Model 3 at a starting price of \$35,000. We are now embarking on the delivery of Model 3 in international markets and are focusing on lowering manufacturing costs while continuing to increase its production rate.

Future Consumer and Commercial EVs

In addition to our volume-produced consumer EVs, including future vehicles such as Model Y and a pickup truck, we are planning to introduce additional types of vehicles to address a broader cross-section of the vehicle market, including commercial EVs such as the Tesla Semi truck, and a new version of the Tesla Roadster. We have started to accept reservations for the Tesla Semi truck and the new Tesla Roadster.

Energy Storage

Using the energy management technologies and manufacturing processes developed for our vehicle powertrain systems, we developed energy storage products for use in homes, commercial facilities and on the utility grid. Advances in battery architecture, thermal management and power electronics that were originally commercialized in our vehicles are now being leveraged in our energy storage products. Our energy storage systems are used for numerous applications including backup power, grid independence, peak demand reduction, demand response, reducing intermittency of renewable generation, replacement of fossil fuel generation and wholesale electric market services.

Our energy product portfolio includes systems with a wide range of applications, from residential to large grid-scale projects. Powerwall 2 is a 14 kWh rechargeable lithium-ion battery designed to store energy at a home or small commercial facility and can be used to provide seamless backup power in a grid outage and to maximize self-consumption of solar power generation. In addition, we offer the Powerpack 2 system, a fully integrated energy storage solution comprised of up to 210kWh (AC) battery packs and up to 650 kVa (at 480V) inverters that can be grouped together to form megawatt hour (“MWh”) and gigawatt hour (“GWh”) sized installations. The Powerpack 2 system can be used by commercial and industrial customers for peak shaving, load shifting, self-consumption of solar generation and demand response, as well as to provide backup power during grid outages, and by utilities and independent power producers to smooth and firm the output of renewable power generation sources, provide dynamic energy capacity to the grid, defer or eliminate the need to upgrade transmission or distribution infrastructure, and provide a variety of other grid services such as frequency regulation and voltage control. Powerpack 2 can also be combined with renewable energy generation sources to create microgrids that provide communities with clean, resilient and affordable power.

Along with designing and manufacturing energy storage products, we continue to develop and advance our software capabilities for the control and optimal dispatch of energy storage systems across a wide range of markets and applications.

Solar Energy Systems

The major components of our solar energy systems include solar panels that convert sunlight into electrical current, inverters that convert the electrical output from the panels to a usable current compatible with the electric grid, racking that attaches the solar panels to the roof or ground, electrical hardware that connects the solar energy system to the electric grid, and our monitoring device. While we have recently started manufacturing solar panels at Gigafactory 2 in collaboration with Panasonic, we currently purchase the majority of system components from vendors, maintaining multiple sources for each major component to ensure competitive pricing and an adequate supply of materials. We also design and manufacture other system components.

The residential solar energy systems that we sell enable our customers to take direct advantage of federal tax credits to reduce their electricity costs. Our solar loan offering enables customers to own their solar energy systems with little upfront cost. We also continue to offer lease and power purchase agreement (“PPA”) options to both residential and commercial customers. Our current standard leases and PPAs have a 20-year term, and we typically offer customers the opportunity to renew their agreements.

In October 2016, we unveiled Solar Roof, which integrates solar energy production with aesthetically pleasing and durable glass roofing tiles and is designed to complement the architecture of homes and commercial buildings while turning sunlight into electricity. We have been installing this product at a slow pace to gather learnings about our design and installation processes, and plan to ramp the production of Solar Roof with significantly improved manufacturing capabilities during 2019.

Technology

Vehicles

Our core competencies are powertrain engineering, vehicle engineering, innovative manufacturing and energy storage. Our core intellectual property includes our electric powertrain, our ability to design vehicles that utilize the unique advantages of an electric powertrain and our development of self-driving technologies. Our powertrain consists of our battery pack, power electronics, motor, gearbox and control software. We offer several powertrain variants for our vehicles that incorporate years of research and development. In addition, we have designed our vehicles to incorporate the latest advances in consumer technologies, such as mobile computing, sensing, displays, and connectivity.

Battery Pack

We design our battery packs to achieve high energy density at a low cost while also maintaining safety, reliability and long life. Our proprietary technology includes systems for high density energy storage, cooling, safety, charge balancing, structural durability, and electronics management. We have also pioneered advanced manufacturing techniques to manufacture large volumes of battery packs with high quality at low cost.

We have significant expertise in the safety and management systems needed to use lithium-ion cells in the automotive environment, and have further optimized cell designs to increase overall performance. These advancements have enabled us to improve over time the cost and performance of our batteries.

Our engineering and manufacturing efforts have been performed with a longer-term goal of building a foundation for further development. For instance, we have designed our battery pack to permit flexibility with respect to battery cell chemistry and form factor. We maintain extensive testing and R&D capabilities at the individual cell level, the full battery-pack level and on other critical battery pack systems, and have built an expansive body of knowledge on lithium-ion cell vendors, chemistry types, and performance characteristics. We believe that the flexibility of our designs, combined with our research and real-world performance data, will enable us to continue to evaluate new battery cells and optimize battery pack system performance and cost for our current and future vehicles.

Power Electronics

The power electronics in our electric vehicle powertrain govern the flow of high voltage electrical current throughout our vehicles and serve to power our electric motor to generate torque while driving and deliver energy into the battery pack while charging.

The drive inverter converts direct current from the battery pack into alternating current to drive our induction and permanent magnet motors and provides “regenerative braking” functionality, which captures energy from the wheels to charge the battery pack. The primary technological advantages to our designs include the ability to drive large amounts of current in a small physical package with high efficiency and low cost.

The charger charges the battery pack by converting alternating current (usually from a wall outlet or other electricity source) into direct current that can be accepted by the battery. Tesla vehicles can recharge on a wide variety of electricity sources due to the design of this charger, from a common household outlet to high power circuits meant for more industrial uses.

Dual Motor Powertrain

We offer dual motor powertrain vehicles, which use two electric motors to maximize traction and performance in an all-wheel drive configuration. Tesla’s dual motor powertrain digitally and independently controls torque to the front and rear wheels. The near-instantaneous response of the motors, combined with low centers of gravity, provides drivers with controlled performance and increased traction control.

Vehicle Control and Infotainment Software

The performance and safety systems of our vehicles and their battery packs require sophisticated control software. There are numerous processors in our vehicles to control these functions, and we write custom firmware for many of these processors. Software algorithms control traction, vehicle stability, the acceleration and regenerative braking of the vehicle, climate control and thermal management, and are also used extensively to monitor the charge state of the battery pack and to manage all of its safety systems. Drivers use the information and control systems in our vehicles to optimize performance, customize vehicle behavior, manage charging modes and times and control all infotainment functions. We develop almost all of this software, including most of the user interfaces, internally.

Self-Driving Development

We have expertise in developing self-driving systems, and currently offer in our vehicles an advanced driver assist system that we refer to as Autopilot, including auto-steering, traffic aware cruise control, automated lane changing, automated parking, Summon and driver warning systems. In October 2016, we began equipping all Tesla vehicles with hardware needed for full self-driving capability, including cameras that provide 360 degree visibility, updated ultrasonic sensors for object detection, a forward-facing radar with enhanced processing, and a powerful new onboard computer. Our Autopilot systems relieve our drivers of the most tedious and potentially dangerous aspects of road travel. Although, at present, the driver is ultimately responsible for controlling the vehicle, our system provides safety and convenience functionality that allows our customers to rely on it much like the system that airplane pilots use when conditions permit. This hardware suite, along with over-the-air firmware updates and field data feedback loops from the onboard camera, radar, ultrasonics, and GPS, enables the system to continually learn and improve its performance.

Additionally, we continue to make significant advancements in the development of fully self-driving technologies.

Energy Storage

We are leveraging many of the component-level technologies from our vehicles to advance our energy storage products, including high density energy storage, cooling, safety, charge balancing, structural durability, and electronics management. By taking a modular approach to the design of battery systems, we are able to maximize manufacturing capacity to produce both Powerwall and Powerpack products. Additionally, we are making significant strides in the area of bi-directional, grid-tied power electronics that enable us to interconnect our battery systems seamlessly with global electricity grids while providing fast-acting systems for power injection and absorption.

Solar Energy Systems

We are continually innovating and developing new technologies to facilitate the growth of our solar energy systems business. For example, Solar Roof is being designed to work seamlessly with Tesla Powerwall 2 and we have developed proprietary software to reduce system design and installation timelines and costs.

Design and Engineering

Vehicles

In addition to the design, development and production of the powertrain, we have created significant in-house capabilities in the design and engineering of electric vehicles and their components and systems. We design and engineer bodies, chassis, interiors, heating and cooling and low voltage electrical systems in-house, and to a lesser extent, in conjunction with our suppliers. Our team has core competencies in computer aided design and crash test simulations, which reduces the product development time of new models.

Additionally, our team has expertise in lightweight materials, a very important characteristic for electric vehicles given the impact of mass on range. Model S and Model X are built with a lightweight aluminum body and chassis which incorporate a variety of materials and production methods that help optimize the weight of the vehicle. Moreover, we have designed Model 3 with a mix of materials to be lightweight and safe while also increasing cost-effectiveness for this mass-market vehicle. We are designing Model Y on the Model 3 platform and expect that Model Y will share about 75% of its components with Model 3, which we expect will reduce the cost and time to ramp production of Model Y.

Energy Storage

We have an in-house engineering team that both designs our energy storage products themselves, and works with our residential, commercial and utility customers to design bespoke systems incorporating our products. Our team's expertise in electrical, mechanical, civil and software engineering enables us to create integrated energy storage solutions that meet the particular needs of all customer types.

Solar Energy Systems

We also have an in-house engineering team that designs a customized solar energy system or Solar Roof for each of our customers, and which works closely with our energy storage engineering teams to integrate an energy storage system when requested by the customer. We have developed software that simplifies and expedites the design process and optimizes the design to maximize the energy production of each system. Our engineers complete a structural analysis of each building and produce a full set of structural design and electrical blueprints that contain the specifications for all system components. Additionally, we design complementary mounting and grounding hardware where required.

Sales and Marketing

Vehicles

Company-Owned Stores and Galleries

We market and sell our vehicles directly to consumers through an international network of company-owned stores and galleries, which we believe enables us to better control costs of inventory, manage warranty service and pricing, maintain and strengthen the Tesla brand, and obtain rapid customer feedback. Our Tesla stores and galleries are highly visible, premium outlets in major metropolitan markets, some of which combine retail sales and service. We have also found that opening a service center in a new geographic area can increase demand. As a result, we have complemented our store strategy with sales facilities and personnel in service centers to more rapidly expand our retail footprint. We refer to these as "Service Plus" locations.

Used Car Sales

Our used car business supports new car sales by integrating the sale of a new Tesla vehicle with a customer's trade-in needs for their existing Tesla and non-Tesla vehicles. The Tesla and non-Tesla vehicles we acquire through trade-ins are subsequently remarketed, either directly by us or through third-party auto auctions. We also receive used Tesla vehicles to resell through lease returns and other sources.

Charging

When not charging at home or at work, Tesla customers can also charge using our Supercharger and Destination Charging networks. In addition, our vehicles can charge at a variety of public charging stations around the world, either natively or through a suite of adapters. This flexibility provides our customers with many charging options to suit various situations.