MASTERCARD INC
Form CT ORDER
December 07, 2011

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Level I

Level II

Level III

Money market

funds (cash and

cash equivalents

& restricted cash)

$

812,279

812,279

$

—

$

—

$

1,812,828

$

1,812,828

$

—

$

—

Interest rate swap

(liability) asset, net

(7,867

)

—

(7,867

)

—

11,070

—

11,070

—

Total

$

804,412

$

812,279

$

(7,867

)

$

—

$

1,823,898

$

1,812,828

$

11,070

$

—

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 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. During the three months ended March 31, 2019, there were no transfers between the levels of the fair value hierarchy.

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 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 investing activities in the consolidated statements of cash flows. Our interest rate swaps outstanding were as follows (in thousands):

	March 31, 2019			December 31, 2018		
	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	$773,188	$ 4,523	$ 12,390	$800,293	$ 12,159	$ 1,089

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

	Three Months Ended March 31,	
	2019	2018
Gross gains	$ 155	$ 9,663
Gross losses	$ 19,443	$ 35

Disclosure of Fair Values

Our financial instruments that are not re-measured at fair value include accounts receivable, MyPower customer notes receivable, rebates receivable, accounts payable, accrued liabilities, customer deposits, the participation interest and debt. The carrying values of these financial instruments other than the participation interest, the convertible senior notes, the 5.30% Senior Notes due in 2025, the solar asset-backed notes, the solar loan-backed notes and the automotive asset-backed notes approximate their fair values.

We estimate the fair value of the convertible senior notes and the 5.30% Senior Notes due in 2025 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 the participation interest, the solar asset-backed notes, the solar loan-backed notes and the automotive asset-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 thousands):

	March 31, 2019		December 31, 2018	
	Carrying Value	Fair Value	Carrying Value	Fair Value
Convertible senior notes	$2,781,150	$3,141,976	$3,660,316	$4,346,642
Senior notes	$1,779,546	$1,563,750	$1,778,756	$1,575,000
Participation interest	$19,367	$18,871	$18,946	$18,431
Solar asset-backed notes	$1,172,288	$1,205,960	$1,183,675	$1,206,755
Solar loan-backed notes	$189,842	$200,111	$203,052	$211,788
Automotive asset-backed notes	$1,057,645	$1,064,698	$1,172,160	$1,179,910

Note 5 – Inventory

Our inventory consisted of the following (in thousands):

	March 31, 2019	December 31, 2018
Raw materials	$1,079,216	$ 931,828
Work in process	277,155	296,991
Finished goods	2,151,012	1,581,763
Service parts	329,467	302,864
Total	$3,836,850	$ 3,113,446

Finished goods inventory included vehicles in transit to fulfill customer orders, new vehicles available for immediate sale at our retail and service center locations, used vehicles and energy storage products. As this was our first quarter delivering Model 3 vehicles outside of North America, finished goods inventory has increased as there are longer lead times associated with finite production capabilities at a single factory from which all Model 3 vehicles are shipped globally.

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

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 three months ended March 31, 2019 and 2018, we recorded write-downs of $64.2 million and $17.3 million, respectively, in cost of revenues.

Note 6 – Solar Energy Systems, Net

Solar energy systems, net, consisted of the following (in thousands):

	March 31, 2019	December 31, 2018
Solar energy systems in service	$6,461,833	$ 6,430,729
Initial direct costs related to customer solar energy system lease acquisition costs	101,204	99,380
	6,563,037	6,530,109
Less: accumulated depreciation and amortization	(550,558)	(495,518)
	6,012,479	6,034,591
Solar energy systems under construction	49,648	67,773
Solar energy systems pending interconnection	179,510	169,032
Solar energy systems, net (1)	$6,241,637	$ 6,271,396

(1) As of March 31, 2019 and December 31, 2018, solar energy systems, net, included $36.0 million of finance leased assets with accumulated depreciation and amortization of $4.2 million and $3.8 million, respectively.

Note 7 – Property, Plant and Equipment

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

	March 31, 2019	December 31, 2018
Machinery, equipment, vehicles and office furniture	$6,584,307	$ 6,328,966
Tooling	1,418,368	1,397,514
Leasehold improvements	987,916	960,971
Land and buildings	2,631,607	4,047,006
Computer equipment, hardware and software	525,138	487,421
Construction in progress	622,180	807,297
	12,769,516	14,029,175
Less: Accumulated depreciation	(2,918,587)	(2,699,098)
Total	$9,850,929	$ 11,330,077

As of December 31, 2018, the table above included $1.69 billion of gross build-to-suit lease assets. As a result of the adoption of the new lease standard on January 1, 2019, we have de-recognized all build-to-suit lease assets and have reassessed these leases to be operating lease right-of-use assets within the consolidated balance sheet as of March 31, 2019 (see Note 2, Summary of Significant Accounting Policies). This includes construction in progress associated with certain build-to-suit lease costs incurred at our Buffalo manufacturing facility, referred to as Gigafactory 2.

Construction in progress is primarily comprised of tooling and equipment related to the manufacturing of our vehicles and a portion of Gigafactory 1 construction. 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 three months ended March 31, 2019 and 2018, we capitalized $7.5 million and $18.8 million, respectively, of interest.

Depreciation expense during the three months ended March 31, 2019 and 2018 was $299.4 million and $245.2 million, respectively. Gross property and equipment under finance leases as of March 31, 2019 and December 31, 2018 was $1.72 billion and $1.52 billion, respectively. Accumulated depreciation on property and equipment under finance leases as of these dates was $276.8 million and $231.6 million, respectively.

Panasonic has partnered with us on Gigafactory 1 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 these terms convey a finance lease, as defined in ASC 842, Leases, their production equipment, we consider them to be leased assets when production commences. 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 long-term debt and finance leases. For all suppliers and partners for which we plan to purchase the full output from their production equipment located at Gigafactory 1, we have applied similar accounting. As of March 31, 2019 and December 31, 2018, we had cumulatively capitalized costs of $1.41 billion and $1.24 billion, respectively, on the consolidated balance sheets in relation to the production equipment under our Panasonic arrangement. We had cumulatively capitalized total costs for Gigafactory 1, including costs under our Panasonic arrangement, of $4.92 billion and $4.62 billion as of March 31, 2019 and December 31, 2018, respectively.

Note 8 – Other Long-Term Liabilities

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

	March 31, 2019	December 31, 2018
Accrued warranty reserve	$590,211	$ 547,125
Build-to-suit lease liability	—	1,662,017
Operating lease right-of-use liabilities	1,000,886	—
Deferred rent expense	—	59,252
Financing obligation	45,566	50,383
Sales return reserve	524,222	84,143
Other noncurrent liabilities	314,250	307,483
Total other long-term liabilities	$2,475,135	$ 2,710,403

As of December 31, 2018, the table above included $1.66 billion of gross non-current build-to-suit lease liabilities. As a result of the adoption of the new lease standard on January 1, 2019, we have de-recognized all build-to-suit lease liabilities and have reassessed these leases to be operating lease right-of-use liabilities as of March 31, 2019. Due to price adjustments we made to our vehicle offerings during the three months ended March 31, 2019, we increased our sales return reserve significantly on vehicles previously sold under our buyback options program. Refer to Note 2, Summary of Significant Accounting Policies, for details on these transactions.

Note 9 – Customer Deposits

Customer deposits primarily consisted 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. In the case of a vehicle, customer deposits are fully refundable up to the point the vehicle is placed into the production cycle. In the case of an energy generation or storage product, customer deposits are fully refundable 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 or until they are applied towards the customer's purchase balance. As of March 31, 2019 and December 31, 2018, we held $768.3 million and $792.6 million, respectively, in customer deposits.

Note 10 – Long-Term Debt Obligations

The following is a summary of our debt as of March 31, 2019 (in thousands):

	Unpaid Principal Balance	Net Carrying Value Current	Net Carrying Value Long-Term	Unused Committed Amount (1)	Contractual Interest Rates	Contractual Maturity Date
Recourse debt:						
1.25% Convertible Senior Notes due in 2021 ("2021 Notes")	1,380,000	—	1,258,166	—	1.25 %	March 2021
2.375% Convertible Senior Notes due in 2022 ("2022 Notes")	977,500	—	878,824	—	2.375 %	March 2022
5.30% Senior Notes due in 2025 ("2025 Notes")	1,800,000	—	1,779,546	—	5.30 %	August 2025
Credit Agreement	1,856,000	—	1,856,000	415,217	1% plus LIBOR	June 2020-July 2023
Vehicle and other Loans	75,498	498	75,000	—	1.8%-4.7%	June 2019-December 2021
1.625% Convertible Senior Notes due in 2019	565,992	550,999	—	—	1.625 %	November 2019
Zero-Coupon Convertible Senior Notes due in 2020	103,000	—	93,161	—	0.0 %	December 2020
Solar Bonds	24,313	3,396	21,432	—	3.0%-5.8%	March 2020 - January 2031
Total recourse debt	6,782,303	554,893	5,962,129	415,217		
Non-recourse debt:						
Warehouse Agreements	174,243	40,591	133,652	925,757	3.9%-4.2%	September 2020
Canada Credit Facility	64,894	30,819	34,075	—	3.6%-5.9%	November 2022
Term Loan due in 2019	164,798	164,798	—	—	6.1 %	April 2019 (2)
Term Loan due in 2021	166,805	7,117	158,835	—	6.3 %	January 2021
China Loan Agreement	11,172	11,172	—	510,328	3.9 %	March 2020
Cash equity debt	462,931	9,335	439,374	—	5.3%-5.8%	July 2033-January 2035
Solar asset-backed notes	1,202,253	30,327	1,141,961	—	4.0%-7.7%	

						September 2024-February 2048
Solar loan-backed notes	196,924	10,671	179,171	—	4.8%-7.5%	September 2048-September 2049
Automotive asset-backed notes	1,062,750	460,314	597,331	—	2.3%-7.9%	December 2019-June 2022
Solar Renewable Energy Credit and other Loans	36,438	32,559	3,495	18,132	4.4%-8.2%	September 2019-July 2021
Total non-recourse debt	3,543,208	797,703	2,687,894	1,454,217		
Total debt	$10,325,511	$1,352,596	$8,650,023	$1,869,434		

The following is a summary of our debt as of December 31, 2018 (in thousands):

	Unpaid Principal Balance	Net Carrying Value Current	Long-Term	Unused Committed Amount (1)	Contractual Interest Rates	Contractual Maturity Date
Recourse debt:						
0.25% Convertible Senior Notes due in 2019 ("2019 Notes")	920,000	912,625	—	—	0.25 %	March 2019
2021 Notes	1,380,000	—	1,243,496	—	1.25 %	March 2021
2022 Notes	977,500	—	871,326	—	2.375 %	March 2022
2025 Notes	1,800,000	—	1,778,756	—	5.30 %	August 2025
Credit Agreement	1,540,000	—	1,540,000	230,999	1% plus LIBOR	June 2020
Vehicle and other Loans	76,203	1,203	75,000	—	1.8%-7.6%	January 2019-December 2021
1.625% Convertible Senior Notes due in 2019	565,992	541,070	—	—	1.625 %	November 2019
Zero-Coupon Convertible Senior Notes due in 2020	103,000	—	91,799	—	0.0 %	December 2020
Solar Bonds	24,725	119	25,190	—	2.6%-5.8%	January 2019-January 2031
Total recourse debt	7,387,420	1,455,017	5,625,567	230,999		
Non-recourse debt:						
Warehouse Agreements	92,000	13,604	78,396	1,008,000	3.9%-4.2%	September 2020
Canada Credit Facility	73,220	31,766	41,454	—	3.6%-5.9%	November 2022
Term Loan due in 2019	180,624	180,624	—	—	6.1 %	January 2019
Term Loan due in 2021	169,050	6,876	161,453	—	6.0 %	January 2021

Cash equity debt	466,837	10,911	441,472	—	5.3%-5.8%	July 2033-January 2035
Solar asset-backed notes	1,214,071	28,761	1,154,914	—	4.0%-7.7%	September 2024-February 2048
Solar loan-backed notes	210,249	9,888	193,164	—	4.8%-7.5%	September 2048-September 2049
Automotive asset-backed notes	1,177,937	467,926	704,234	—	2.3%-7.9%	December 2019-June 2022
Solar Renewable Energy Credit and other Loans	26,742	16,612	9,836	17,633	5.1%-7.9%	December 2019-July 2021
Total non-recourse debt	3,610,730	766,968	2,784,923	1,025,633		
Total debt	$10,998,150	$2,221,985	$8,410,490	$1,256,632		

(1) Unused committed amounts under some of our credit facilities and financing funds 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, our interests in financing funds or various other assets). Upon draw-down of any unused committed amounts, there are no restrictions on use of available funds for general corporate purposes.

(2) On April 16, 2019, the maturity date of the Term Loan due in 2019 was extended to June 2019.

Recourse debt refers to debt that is recourse to our general assets. Non-recourse debt refers to debt that is recourse to only specified assets of our subsidiaries. The differences between the unpaid principal balances and the net carrying values are due to convertible senior note conversion features, debt discounts or deferred financing costs. As of March 31, 2019, we were in material compliance with all financial debt covenants, which include minimum liquidity and expense-coverage balances and ratios.

2019 Notes

During the first quarter of 2019, we repaid the $920.0 million in aggregate principal amount of the 2019 Notes.

Credit Agreement

On March 6, 2019, we amended and restated the senior asset-based revolving credit agreement (the “Credit Agreement”) to increase the total lender commitments by $500.0 million to $2.425 billion, and extend the term of substantially all of the total commitments to July 2023.

China Loan Agreement

On March 1, 2019, one of our subsidiaries entered into a loan agreement with a syndicate of lenders in China for an unsecured facility of up to RMB 3.50 billion (or the equivalent amount drawn in U.S. dollars), to be used for expenditures related to the construction of and production at our Gigafactory Shanghai. Borrowed funds bear interest at an annual rate of: (i) for RMB-denominated loans, 90% of the one-year rate published by the People’s Bank of China, and (ii) for U.S. dollar-denominated loans, the sum of one-year LIBOR plus 1.0%. The loan facility is non-recourse to our assets.

Term Loan due in 2019

On April 16, 2019, we extended the maturity of the Term Loan due in 2019 to June 2019.

Interest Incurred

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 2018 Notes, the 2019 Notes, the 2021 Notes and the 2022 Notes (in thousands):

	Three Months Ended March 31,	
	2019	2018
Contractual interest coupon	$ 10,359	$ 10,548
Amortization of debt issuance costs	1,470	1,615
Amortization of debt discounts	28,074	29,859
Total	$ 39,903	$ 42,022

Note 11 – Leases

We have entered into various non-cancellable 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.

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 lease payments is recognized on a straight-line basis over the lease term. Certain operating leases provide for annual increases to lease payments based on an index or rate. We estimate the annual increase in lease payments based on the index or rate at the lease commencement date, for both our historical leases and for new leases commencing after January 1, 2019. Differences between the estimated lease payment and actual payment are expensed as incurred. Lease expense for finance lease payments is recognized as amortization expense of the finance lease ROU asset and interest expense on the finance lease liability over the lease term.

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

	March 31, 2019
Operating leases:	
Operating lease right-of-use assets	$1,253,027
Accrued liabilities and other	$208,362
Other long-term liabilities	1,000,886
Total operating lease liabilities	$1,209,248
Finance leases:	
Solar energy systems, net	$31,742
Property, plant and equipment, net	1,447,502
Total finance lease assets	$1,479,244
Current portion of long-term debt and finance leases	$353,115
Long-term debt and finance leases, net of current portion	1,137,927
Total finance lease liabilities	$1,491,042

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

	Three Months Ended March 31, 2019
Operating lease expense:	
Operating lease expense (1)	$134,804
Finance lease expense:	
Amortization of leased assets	$57,265
Interest on lease liabilities	23,561
Total finance lease expense	$80,826
Total lease expense	$215,630

(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 (in thousands):

	March 31, 2019	
Weighted-average remaining lease term:		
Operating leases	6.7 years	
Finance leases	4.5 years	
Weighted-average discount rate:		
Operating leases	6.4	%
Finance leases	6.6	%

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

	Three Months Ended March 31, 2019
Cash paid for amounts included in the measurement of lease liabilities:	
Operating cash flows from operating leases	$ 111,320
Operating cash flows from finance leases (interest payments)	$ 22,820
Financing cash flows from finance leases	$ 66,656
Leased assets obtained in exchange for new finance lease liabilities	$ 217,847
Leased assets obtained in exchange for new operating lease liabilities	$ 22,004

As of March 31, 2019, the maturities of our operating and finance lease liabilities (excluding short-term leases) are as follows (in thousands):

	Operating Leases	Finance Leases
Nine months ending December 31, 2019	$209,220	$315,700
2020	258,435	413,362
2021	228,692	621,471
2022	182,345	277,952
2023	153,498	8,142
Thereafter	477,857	15,992
Total minimum lease payments	1,510,047	1,652,619
Less: Interest	300,799	161,577
Present value of lease obligations	1,209,248	1,491,042
Less: Current portion	208,362	353,115
Long-term portion of lease obligations	$1,000,886	$1,137,927

As of March 31, 2019, we have excluded from the table above an additional operating lease for a facility that has not yet commenced of $55.8 million. This operating lease is expected to commence in the second half of 2019 for an initial lease term of 11.5 years.

As previously reported in our Annual Report on Form 10-K for the year ended December 31, 2018 and under legacy lease accounting (ASC 840), future minimum lease payments under non-cancellable leases as of December 31, 2018 are as follows (in thousands):

	Operating Leases	Finance Leases
2019	$275,654	$416,952
2020	256,931	503,545
2021	230,406	506,197
2022	182,911	23,828
2023	157,662	4,776
Thereafter	524,590	5,938
Total minimum lease payments	$1,628,154	1,461,236
Less: Interest		122,340
Present value of lease obligations		1,338,896
Less: Current portion		345,714
Long-term portion of lease obligations		$993,182

Non-cancellable Operating Lease Receivables

Under the new lease standard, we are the lessor of certain vehicle arrangements as described in Note 2, Summary of Significant Accounting Policies. As of March 31, 2019, maturities of our operating lease receivables from customers for each of the next five years and thereafter were as follows (in thousands):

Nine months ending December 31, 2019	$392,255
2020	446,135
2021	293,069
2022	189,094
2023	188,787
Thereafter	2,469,055
Total	$3,978,395

As previously reported in our Annual Report on Form 10-K for the year ended December 31, 2018 and under legacy lease accounting (ASC 840), future minimum lease payments to be received from customers under non-cancellable leases as of December 31, 2018 are as follows (in thousands):

2019	$501,625
2020	418,299
2021	270,838
2022	186,807
2023	188,809
Thereafter	2,469,732
Total	$4,036,110

The above tables do 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. Following the adoption of the new lease standard, solar energy system sales and PPAs that commence after January 1, 2019, where we are the lessor and were previously accounted for as leases, will no longer meet the definition of a lease and are therefore not included in the table as of March 31, 2019 (refer to Note 2, Summary of Significant Accounting Policies).

Note 12 – Equity Incentive Plans

In 2010, we adopted the 2010 Equity Incentive Plan (the “2010 Plan”). The 2010 Plan provides for the granting of stock options, RSUs and stock purchase rights to our employees, directors and consultants. Stock options granted under the 2010 Plan may be either incentive stock options or nonqualified stock options. Incentive stock options may only be granted to our employees. Nonqualified stock options may be granted to our employees, directors and consultants. Generally, our stock options and RSUs vest over four years and 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 March 31, 2019, 13,370,496 shares were reserved and available for issuance under the 2010 Plan.

2018 CEO Performance Award

In March 2018, our stockholders approved the Board of Directors’ grant of 20,264,042 stock option awards 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 billion for the first tranche and increases by increments of $50 billion thereafter, and (ii) any one of the following eight operational milestones focused on revenue or eight operational milestones focused on Adjusted EBITDA have been met for the previous four consecutive fiscal quarters on an annualized basis. 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.

Total Annualized Revenue (in billions)	Annualized Adjusted EBITDA (in billions)
$20.0	$1.5
$35.0	$3.0
$55.0	$4.5
$75.0	$6.0
$100.0	$8.0
$125.0	$10.0
$150.0	$12.0
$ 175.0	$14.0

As of March 31, 2019, two operational milestones: (i) $20.0 billion total annualized revenue and (ii) $1.5 billion annualized adjusted EBITDA have been achieved, subject to the formal certification by our Board of Directors, while no market capitalization milestones have been achieved. Consequently, no shares subject to the 2018 CEO Performance Award have vested as of the date of this filing.

As of March 31, 2019, the following operational milestone was considered probable of achievement:

- Adjusted EBITDA of $3.0 billion

Stock-based compensation expense associated with the 2018 CEO Performance Award is recognized over the longer of the expected achievement period for each pair of market capitalization or operational milestones, beginning at the point in time when the relevant operational milestone is considered probable of being met. If additional operational milestones become probable, stock-based compensation expense will be recorded in the period it becomes probable including cumulative catch-up expense for the service provided since the grant date. The market capitalization milestone period and the valuation of each tranche are determined using a Monte Carlo simulation and is used as the basis for determining the expected achievement period. The probability of meeting an operational milestone is based on a subjective assessment of our future financial projections. Even though no tranches of the 2018 CEO Performance Award vest unless a market capitalization and a matching operational milestone are both achieved, stock-based compensation expense is recognized only when an operational milestone is considered probable of achievement regardless of how much additional market capitalization must be achieved in order for a tranche to vest. At our current market capitalization, even the first tranche of the 2018 CEO Performance Award will not vest unless our market capitalization were to more than double from the current level and stay at that increased level for a sustained period of time. Additionally, stock-based compensation represents a non-cash expense and is recorded as a selling, general, and administrative operating expense in our consolidated statement of operations.

As of March 31, 2019, we had $543.0 million of total unrecognized stock-based compensation expense for the operational milestones that were achieved but not vested or considered probable of achievement, which will be recognized over a weighted-average period of 2.9 years. As of March 31, 2019, we had unrecognized stock-based compensation expense of $1.51 billion for the operational milestones that were considered not probable of achievement. For the three months ended March 31, 2019, we recorded stock-based compensation expense of $55.0 million related to the 2018 CEO Performance Award. From March 21, 2018, when the grant was approved by our stockholders, through March 31, 2018, we recorded stock-based compensation expense of $6.7 million related to the 2018 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 1,073,000 shares of our common stock. Each award consisted of the following 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:

- 1/4th of each award vests upon completion of the first Model X production vehicle;
- 1/4th of each award vests upon achieving aggregate production of 100,000 vehicles in a trailing 12-month period;
- 1/4th of each award vests upon completion of the first Model 3 production vehicle; and
- 1/4th of each award vests upon achieving an annualized gross margin of greater than 30% for any three-year period.

As of March 31, 2019, the following performance milestones had been achieved:

- Completion of the first Model X production vehicle;
- Completion of the first Model 3 production vehicle; and
- Aggregate production of 100,000 vehicles in a trailing 12-month period.

We begin recognizing stock-based compensation expense as each performance milestone becomes probable of achievement. As of March 31, 2019, we had unrecognized stock-based compensation expense of $10.0 million for the performance milestone that was considered not probable of achievement. For the three months ended March 31, 2019

and 2018, we did not record any additional stock-based compensation related to these awards.

2012 CEO Performance Award

In August 2012, our Board of Directors granted 5,274,901 stock option awards to our CEO (the "2012 CEO Performance Award"). 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. Each vesting tranche requires a combination of a pre-determined performance milestone and an incremental increase in our market capitalization of $4.00 billion, as compared to our initial market capitalization of $3.20 billion at the time of grant. As of March 31, 2019, the market capitalization conditions for all of the vesting tranches and the following performance milestones had been achieved:

- Successful completion of the Model X alpha prototype;
- Successful completion of the Model X beta prototype;

- Completion of the first Model X production vehicle;
- Aggregate production of 100,000 vehicles;
- Successful completion of the Model 3 alpha prototype;
- Successful completion of the Model 3 beta prototype;
- Completion of the first Model 3 production vehicle;
- Aggregate production of 200,000 vehicles; and
- Aggregate production of 300,000 vehicles.

We begin recognizing stock-based compensation expense as each milestone becomes probable of achievement. As of March 31, 2019, we had unrecognized stock-based compensation expense of $5.7 million for the performance milestone that was considered not probable of achievement. For the three months ended March 31, 2019, we recorded no stock-based compensation expense related to the 2012 CEO Performance Award. For the three months ended March 31, 2018, we recorded stock-based compensation expense of $0.1 million related to this award.

Our CEO earns a base salary that reflects the currently applicable minimum wage requirements under California law, and he is subject to income taxes based on such base salary. However, he has never accepted and currently does not accept his salary.

Summary Stock-Based Compensation Information

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

	Three Months Ended March 31,	
	2019	2018
Cost of revenues	$ 19,837	$ 18,085
Research and development	72,482	61,107
Selling, general and administrative	114,079	62,447
Restructuring and other	1,980	—
Total	$ 208,378	$ 141,639

We realized no income tax benefit from stock option exercises in each of the periods presented due to cumulative losses and valuation allowances. As of March 31, 2019, we had $1.72 billion of total unrecognized stock-based compensation expense related to non-performance awards, which will be recognized over a weighted-average period of 3.0 years.

Note 13 – Commitments and Contingencies

Operating Lease Arrangement in Buffalo, New York

We have an operating lease arrangement with the Research Foundation for the State University of New York (the "SUNY Foundation") where the SUNY Foundation is constructing a manufacturing facility where we have housed the development and production of solar products and components, referred to as Gigafactory 2, with our participation in the design and construction, is installing certain utilities and other improvements and is acquiring certain manufacturing equipment designated by us to be used in the manufacturing facility. Following the adoption of ASC 842, we no longer recognize the build-to-suit asset and related depreciation expense or the corresponding financing liability and related amortization for Gigafactory 2 in our consolidated financial statements. During the three months

ended March 31, 2018, we began production at the manufacturing facility, although construction has not been fully completed as of March 31, 2019.

Legal Proceedings

Securities 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. 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, but 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. The parties are proceeding with discovery. The case is set for trial in March 2020. The parties are also deciding on a mediation date.

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.

We believe that claims challenging the SolarCity acquisition are without 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.

Securities Litigation Relating to Production of Model 3 Vehicles

On October 10, 2017, a purported stockholder class action was filed in the U.S. District Court for the Northern District of California against Tesla, two of its current officers, and a former officer. The complaint alleges violations of federal securities laws and seeks unspecified compensatory damages and other relief on behalf of a purported class of purchasers of Tesla securities from May 4, 2016 to October 6, 2017. The lawsuit claims that Tesla supposedly made materially false and misleading statements regarding the Company's preparedness to produce Model 3 vehicles. Plaintiffs filed an amended complaint on March 23, 2018, and defendants filed a motion to dismiss on May 25, 2018. The court granted defendants' motion to dismiss with leave to amend. Plaintiffs filed their amended complaint on September 28, 2018, and defendants filed a motion to dismiss the amended complaint on February 15, 2019. The hearing on the motion to dismiss was held on March 22, 2019, and on March 25, 2019, the Court ruled in favor of defendants and dismissed the complaint with prejudice. On April 8, 2019, plaintiffs filed a notice of appeal. We continue to believe that the claims are without merit and intend to defend against this lawsuit vigorously. We are unable to estimate the possible loss or range of loss, if any, associated with this lawsuit.

On October 26, 2018, in a similar action, a purported stockholder class action was filed in the Superior Court of California in Santa Clara County against Tesla, Elon Musk and seven initial purchasers in an offering of debt securities by Tesla in August 2017. The complaint alleges misrepresentations made by Tesla regarding the number of Model 3 vehicles Tesla expected to produce by the end of 2017 in connection with such offering, and seeks unspecified compensatory damages and other relief on behalf of a purported class of purchasers of Tesla securities in such offering. Tesla thereafter removed the case to federal court. On January 22, 2019, plaintiff abandoned its effort to proceed in state court, instead filing an amended complaint against Tesla, Elon Musk and seven initial purchasers in the debt offering before the same judge in the U.S. District Court for the Northern District of California who is hearing the above-referenced earlier filed federal court case. On February 5, 2019, the Court stayed this new case

pending a ruling on the motion to dismiss the complaint in the above earlier filed case. Now that the above-referenced earlier filed federal court case has been dismissed, the parties are negotiating a briefing schedule for the motion to dismiss that defendants will be filing in this case. We believe that the claims are without merit and intend to defend against this lawsuit vigorously. We are unable to estimate the possible loss or range of loss, if any, associated with this lawsuit.

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 Mr. Musk and the members of Tesla's board of directors as then constituted, alleging that such board members breached their fiduciary duties by approving the stock-based compensation plan. 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 is set for May 9, 2019. We believe the claims asserted in this lawsuit are without merit and intend to defend against them vigorously.

Securities 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 Elon 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 is stayed while the issue of selection of lead counsel is briefed and argued before the U.S. Court of Appeals for the Ninth Circuit. We believe that the claims have no merit and intend to defend against them vigorously. We are unable to estimate the potential loss, or range of loss, associated with these claims.

Between October 17, 2018 and November 9, 2018, five derivative lawsuits were filed in the Delaware Court of Chancery against Mr. Musk and the members of Tesla's board of directors as then constituted in relation to statements made and actions connected to a potential going private transaction. In addition to these cases, on October 25, 2018, another derivative lawsuit was filed in the U.S. District Court for the District of Delaware against Mr. Musk and the members of the Tesla board of directors as then constituted. The Courts in both the Delaware federal court and Delaware Court of Chancery actions have consolidated their respective actions and stayed each consolidated action pending resolution of the above-referenced consolidated purported stockholder class action. We believe that the claims have no merit and intend to defend against them vigorously. We are unable to estimate the potential loss, or range of loss, associated with these claims.

On March 7, 2019, various stockholders filed a derivative suit in the Delaware Court of Chancery, purportedly on behalf of the Company, naming Elon Musk and Tesla's board of directors, also related to Mr. Musk's August 7, 2018 Twitter post that is the basis of the above-referenced consolidated purported stockholder class action as well as Mr. Musk's February 19, 2019 Twitter post regarding Tesla's vehicle production. The suit asserts claims for breach of fiduciary duty and seeks declaratory and injunctive relief, unspecified damages, and other relief. Plaintiffs moved for expedited proceedings in connection with the declaratory and injunctive relief. Briefs were filed on March 13, 2019 and the hearing held on March 18, 2019. Defendants prevailed, with the Court denying plaintiffs' request for an expedited trial and granting defendants' request to stay this action pending the outcome of the above-referenced consolidated purported stockholder class action.

Settlement with SEC related to Potential Going Private Transaction

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 U.S. Securities and Exchange Commission (the "SEC") relating to Elon Musk's prior statement that he was considering taking Tesla private. Without admitting or denying any of the SEC's allegations, and with no restriction on Mr. Musk's ability to serve as an officer or director on the Board (other than as its Chair), among other things, we and Mr. Musk paid civil penalties of $20 million each and agreed that an independent director will serve as Chair of the Board for at least three years, and we appointed such an independent Chair of the Board and two additional independent directors to the Board, and further enhanced our disclosure controls and other corporate governance-related matters. On April 26, 2019, a proposed amendment to the settlement to modify certain of the previously-agreed disclosure procedures to clarify the application of such procedures was submitted to the Court for approval. All other terms of the prior settlement are proposed by the parties to be reaffirmed without modification.

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.

In particular, the SEC has issued subpoenas to Tesla in connection with (a) Mr. Musk's prior statement that he was considering taking Tesla private and (b) certain projections that we made for Model 3 production rates during 2017 and other public statements relating to Model 3 production. The DOJ has also asked us to voluntarily provide it with information about each of these matters and is investigating. Aside from the settlement with the SEC (including the proposed amendment as described above) relating to Mr. Musk's statement that he was considering taking Tesla private, there have not been any 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 U.S. Treasury grants or ITCs. Generally, such obligations would arise as a result of reductions to the value of the underlying solar energy systems as assessed by the U.S. Treasury Department for purposes of claiming U.S. Treasury grants or as assessed by the IRS for purposes of claiming ITCs or U.S. Treasury grants. For each balance sheet date, we assess and recognize, when applicable, a distribution payable for the potential exposure from this obligation based on all the information available at that time, including any guidelines issued by the U.S. Treasury Department on solar energy system valuations for purposes of claiming U.S. Treasury grants and any audits undertaken by the IRS. 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.

The maximum potential future payments that we could have to make under this obligation would depend on the difference between the fair values of the solar energy systems sold or transferred to the funds as determined by us and the values that the U.S. Treasury Department would determine as fair value for the systems for purposes of claiming U.S. Treasury grants or the values the IRS would determine as the fair value for the systems for purposes of claiming ITCs or U.S. Treasury grants. We claim U.S. Treasury grants based on guidelines provided by the U.S. Treasury department and the statutory regulations from the IRS. We use fair values determined with the assistance of independent third-party appraisals commissioned by us as the basis for determining the ITCs that are passed-through to and claimed by the fund investors. Since we cannot determine future revisions to U.S. Treasury Department guidelines governing solar energy system values or how the IRS will evaluate system values used in claiming ITCs or U.S. Treasury grants, we are unable to reliably estimate the maximum potential future payments that it could have to make under this obligation as of each balance sheet 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.

Our lease pass-through financing funds have a one-time lease payment reset mechanism that occurs after the installation of all solar energy systems in a fund. As a result of this mechanism, we may be required to refund master lease prepayments previously received from investors. Any refunds of master lease prepayments would reduce the lease pass-through financing obligation.

Letters of Credit

As of March 31, 2019, we had $224.3 million of unused letters of credit outstanding.

Note 14 – 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 or vehicles and the associated customer contracts to be sold or contributed to these VIEs, redeploying solar energy systems or vehicles 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 thousands):

	March 31, 2019	December 31, 2018
Assets		
Current assets		
Cash and cash equivalents	$68,204	$ 75,203
Restricted cash	70,705	130,927
Accounts receivable, net	29,647	18,702
Prepaid expenses and other current assets	9,038	10,262
Total current assets	177,594	235,094
Operating lease vehicles, net	199,842	155,439
Solar energy systems, net	5,112,908	5,116,728
Restricted cash, net of current portion	60,444	65,262
Other assets	58,098	55,554
Total assets	$5,608,886	$ 5,628,077
Liabilities		
Current liabilities		
Accounts payable	$—	$ 32
Accrued liabilities and other	89,156	132,774
Deferred revenue	25,735	21,345
Current portion of long-term debt and finance leases	678,644	662,988
Total current liabilities	793,535	817,139
Deferred revenue, net of current portion	182,374	177,451
Long-term debt and finance leases, net of current portion	1,170,357	1,237,707
Other long-term liabilities	24,358	26,400
Total liabilities	$2,170,624	$ 2,258,697

Note 15 – Related Party Transactions

Related party balances were comprised of the following (in thousands):

	March 31, 2019	December 31, 2018
Solar Bonds issued to related parties	$ 100	$ 100
Convertible senior notes due to related parties	$ 2,713	$ 2,674

Our convertible senior notes are not re-measured at fair value (refer to Note 4, Fair Value of Financial Instruments). As of March 31, 2019 and December 31, 2018, the unpaid principal balance of convertible senior notes due to related parties is $3.0 million.

Note 16 – 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, sales of electric vehicle components and systems to other manufacturers, retail merchandise, and sales by our acquired subsidiaries to third party customers. The energy generation and storage segment includes the design, manufacture, installation, sales, and leasing of solar energy generation and energy storage products. Our CODM does not evaluate operating segments using asset or liability information. The following table presents revenues and gross margins by reportable segment (in thousands):

	Three Months Ended March 31,	
	2019	2018
Automotive segment		
Revenues	$ 4,216,803	$ 2,998,729
Gross profit	$ 557,969	$ 421,867
Energy generation and storage segment		
Revenues	$ 324,661	$ 410,022
Gross profit	$ 7,774	$ 34,659

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

	Three Months Ended March 31,	
	2019	2018
United States	$ 2,329,569	$ 1,844,447
China	779,413	508,703
Norway	416,060	162,319
Netherlands	113,351	146,527
Other	903,071	746,755
Total	$ 4,541,464	$ 3,408,751

The revenues in certain geographic areas were impacted by the price adjustments we made to our vehicle offerings during the three months ended March 31, 2019. Refer to Note 2, Summary of Significant Accounting Policies, for details.

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

	March 31,	December 31,

	2019	2018
United States	$15,577,311	$16,741,409
International	515,255	860,064
Total	$16,092,566	$17,601,473

Note 17 – Restructuring and Other

During the first quarter of 2019, we carried out certain restructuring actions in order to reduce costs and improve efficiency. As a result, we recognized $43.5 million of costs primarily related to employee termination expenses and losses from closing certain stores. These costs were substantially paid by the end of first quarter of 2019.

ITEM 2. 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 accompanying notes included elsewhere in this Quarterly Report on Form 10-Q.

Overview

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 and other services related to our products.

Automotive

Our production vehicle fleet includes our Model S premium sedan and our Model X SUV, which are our highest-performance vehicles, and our Model 3, a lower-priced sedan designed for the mass market. We continue to enhance our vehicle offerings with enhanced Autopilot options, internet connectivity and free over-the-air software updates to provide additional safety, convenience and performance features. In March 2019, we unveiled Model Y, a compact SUV utilizing the Model 3 platform, which we expect to produce at high volumes by the end of 2020. In addition, we have several future electric vehicles in our product pipeline, including Tesla Semi, a pickup truck and a new version of the Tesla Roadster.

Energy Generation and Storage

We sell and lease retrofit solar energy systems and sell renewable energy and energy storage products to our customers, and are ramping our Solar Roof product that combines solar energy generation with attractive, integrated styling. Our energy storage products, which we manufacture at Gigafactory 1, consist of Powerwall, mostly for residential applications, and Powerpack, for commercial, industrial and utility-scale applications.

Management Opportunities, Challenges and Risks

Automotive Demand, Production and Deliveries

Our goal is to produce the world's highest quality vehicles as quickly and as cost-effectively as possible with a priority on workplace health and safety. The worldwide automotive markets for alternative fuel vehicles and self-driving technology are highly competitive and we expect them to become even more so. However, we believe that the unique features and the safety aspects of our vehicles, our constant innovation, our growing brand, the increased affordability introduced with Model 3, the expansion of our global service and charging operations and infrastructure, and our future vehicles will continue to generate incremental demand for our vehicles by making them accessible to larger and previously untapped consumer and commercial markets. We believe that an increasingly important factor in our success will be the Autopilot features in our vehicles and eventually, our self-driving technology in which we are making significant strides through our proprietary and powerful full self-driving computer and remotely updateable artificial intelligence software, which we expect will facilitate the achievement of fully autonomous driving in our vehicles. While we are subject to regulatory constraints over which we have no control, our ultimate goal is an autonomously-driven future that improves safety for everyone on the road and provides our customers with convenience and additional income through participation in an autonomous Tesla ride-hailing network, which we will also operate with our own vehicles. We also believe that we have an advantage over our competitors with respect to our battery and powertrain technology, as our vehicles' EPA-rated range per kWh is expected to be superior to that of other electric vehicles to be introduced in the near term, and we have the ability to improve our vehicles through

over-the-air software updates.

On the other hand, we may be impacted by trade policies, political uncertainty and economic cycles involving geographic regions where we have significant operations. Sales of vehicles in the automotive industry also tend to be cyclical in many markets, which may expose us to increased volatility. In addition, the federal tax credit for the purchase of a qualified electric vehicle in the U.S. was reduced to $3,750 for any Tesla vehicle delivered during the first or second quarter of 2019, and will be further reduced to $1,875 for each Tesla vehicle delivered in the third or fourth quarter of 2019 and to $0 for each Tesla vehicle delivered thereafter. We believe that this phase-out likely pulled forward some vehicle demand into 2018 and could create similar pull-forwards in 2019 before each further step reduction in the federal tax credit. In the long run, we do not expect a meaningful impact to our sales in the U.S., as we believe that each of our vehicle models offers a compelling proposition even without incentives. Finally, in the first quarter of 2019, we announced a global shift to exclusively transact our vehicle sales through the Internet (except for limited inventory sales), and we are in the process of optimizing our retail operations at our stores accordingly. We believe that this strategy will allow us to maximize our reach, decrease costs and vehicle prices, and improve the purchasing experience. However, prospective customers may initially be wary of this approach, which traditionally has not been used to sell vehicles at volume. We also made certain adjustments to our vehicle prices during the first quarter of 2019 to reflect the anticipated resulting changes to our cost structure, and as a limited accommodation to customers in consideration of the first reduction in the federal tax credit. As such pricing changes may impact our vehicles' resale values, we increased our estimates of the volume of vehicles that may potentially be returned to us under pre-existing resale value guarantees provided to customers and partners for certain financing programs, which resulted in a net reduction in gross profit in the first quarter of 2019.

In the first quarter of 2019, Model 3 was once again the best-selling premium vehicle in the United States. Vehicles traded in to us by Model 3 customers continue to validate a wider addressable market for this vehicle than existing owners of premium vehicles, and this trend has only increased following the introduction in the first quarter of 2019 of the $35,000 base price Model 3 Standard Range and Model 3 Standard Range Plus. Model 3 Standard Range is a software-limited version of Model 3 Standard Range Plus, which offers upgraded specifications at an excellent value and has been far more popular than Model 3 Standard Range. Moreover, we introduced Model 3 leasing in the United States in April 2019 in order to further expand the appeal of Model 3. Outside of the United States, where the mid-sized premium sedan market is significantly larger, we have only recently commenced deliveries of Model 3 in Europe and China as the first steps in our global expansion of this vehicle. Overall, we believe that we have only begun to explore the market opportunities for Model 3. We produce variants (including regional versions) of Model 3 in batches in accordance with the demand that we expect for them, however, and we have long lead times associated with procuring certain parts and finite production capabilities at a single factory from which all Model 3 vehicles are shipped globally, including to destinations with long transit times. If our specific Model 3 demand expectations prove inaccurate, including as we continue to expand the markets in which we offer Model 3, we may not be able to timely generate sales matched to the specific vehicles that we produce in the same timeframe, which may negatively impact our deliveries in a particular period.

Our Model 3 production continued to ramp during the first quarter of 2019, and we expect to continue to grow Model 3 production to a sustained rate of 7,000 vehicles per week at our Tesla Factory by the end of 2019. Furthermore, in January 2019 we commenced construction of our Gigafactory Shanghai in China. We expect to build a production process that is optimized and simplified for Model 3 production, comprised of stamping, body joining and paint shops and general assembly, at Gigafactory Shanghai to begin production of certain trims of Model 3 for China by the end of 2019. We believe that the efficiencies of local production, as well as avoiding certain tariffs on U.S.-manufactured vehicles, will allow us to offer Model 3 at a low average selling price in the largest market for electric vehicles in the world. Inclusive of and dependent upon how quickly we can ramp Gigafactory Shanghai, our next milestone is to be able to produce at least 500,000 units of all vehicle models combined in a continuous 12-month period ending no later than June 30, 2020. However, the timeframe for Gigafactory Shanghai is subject to a number of uncertainties, including regulatory approval, supply chain constraints, and the pace of installing production equipment and bringing the factory online. Ultimately, achieving increased Model 3 production cost-effectively will require that we timely

address any bottlenecks, such as an isolated supplier limitation in the first quarter of 2019, that may arise as we continue to ramp, and establish and maintain sustained supplier capacity, not only at our U.S. manufacturing facilities but also locally at Gigafactory Shanghai.

We experienced a decline in Model S and Model X deliveries in the first quarter of 2019 as compared to recent historical levels, which we believe was caused by weaker demand due to seasonality, a pull-forward of sales into the fourth quarter of 2019 in the United States as a result of the first federal tax credit reduction, and the discontinuation of our 75 kWh battery pack versions. We also saw mismatches between the mix of variants ordered and our manufacturing capacity allocated among such variants, including as a result of our adjustments to vehicle pricing during the first quarter of 2019. We have taken certain steps that we believe will offset such issues, such as making our Model S and Model X lineup even more compelling by adopting a new generation of powertrain for these vehicles that features better range and acceleration than ever before—including in standard range versions that we re-introduced at the same time. This upgrade ensures the best performance characteristics with our flagship vehicles, even at the standard range trims, while preserving differentiation from Model 3.

Advancing our customer-facing infrastructure remains a top priority. Delivering vehicles to our customers and the related logistics, especially in our first quarter of Model 3 deliveries outside of North America, presented challenges that among other things, caused vehicle deliveries to be deferred into the second quarter of 2019. However, we are working to eliminate the manufacturing and delivery patterns that contribute to such delays and logistical issues, by making these processes evenly spread out across each quarter. We are also continuing to optimize, expand and invest in our servicing capabilities for our rapidly growing customer vehicle fleet, in order to ensure a convenient and efficient customer experience. We also plan to continue to increase the number of Superchargers and Destination Charging connectors globally, and we recently introduced and began to deploy our 250 kilowatt V3 Supercharger technology to enable faster charging times while reducing our related costs. However, we will have to stabilize and sustain our delivery and logistics model to deliver an increasing number of vehicles, and we have only limited experience with this at scale, particularly in markets outside of North America. Moreover, if our growing fleet of customer vehicles, particularly Model 3, experiences unexpected reliability issues, it could outpace and overburden our servicing capabilities.

Finally, we recently unveiled Model Y, which we expect to build on the existing Model 3 platform, using manufacturing capacity at either the Tesla Factory or Gigafactory 1 that we believe will be less costly per unit of capacity than that of our original Model 3 lines. Given the specifications, performance and price we are planning for Model Y, and the growing compact SUV segment in which it will compete, Model Y presents an exciting opportunity for Tesla.

Energy Generation and Storage Demand, Production and Deployment

We are continuing to reduce customer acquisition costs of our energy generation products, by focusing on selling these products directly and efficiently. We have recently made the online buying experience for our energy products simpler and more accessible by standardizing the offerings for what has traditionally been a cumbersome customized process and offering highly competitive pricing, which should result in cost efficiencies and a larger market. As we continue to implement this strategy, we expect that our retrofit solar system deployments will stabilize and grow in the second half of the year.

We are continuing with design iterations and testing on our Solar Roof product to improve our manufacturing capabilities, and we are continuing installations at a slow pace with the expectation that we will ramp production during 2019 and beyond.

We expect our energy storage products to continue to experience rapid growth, and we are targeting to more than double our deployments from 2018 to over 2 GWh in 2019. We continue to see global opportunities for projects, including to mitigate the costs of electricity and increase energy grid reliability. We are continuing to ramp production for these products at Gigafactory 1, including by re-routing certain cell production capacity that had temporarily been used for Model 3 back to these products, and we have seen further manufacturing efficiencies and improvements in our installation processes as we ramp.

Trends in Cash Flow, Capital Expenditures and Operating Expenses

Capital expenditures in 2019 are projected to be approximately $2.0 to 2.5 billion, to continue to develop our main projects including Gigafactory Shanghai, Model Y and Tesla Semi, as well as to further expand our Supercharger and vehicle service and repair networks.

Generally, we expect operating expenses as a percentage of revenue to continue to decrease in the future due to increases in expected revenues and as we focus on increasing operational efficiency.

In March 2018, our stockholders approved a new 10-year CEO performance award for Elon Musk with vesting contingent on achieving market capitalization and operational milestones (the “2018 CEO Performance Award”). Consequently, we may incur significant additional non-cash stock-based compensation expense over the term of the award as each operational milestone becomes probable of vesting.

Automotive Financing Options

We offer financing arrangements for our vehicles in certain markets in North America, Europe and Asia primarily through various financial institutions. We offer resale value guarantees or similar buy-back terms to certain 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. Currently, both programs are available only in certain international markets. Resale value guarantees available for exercise within the 12 months following March 31, 2019 totaled $136.6 million in value.

Vehicle deliveries with the resale value guarantee do not impact our near-term cash flows and liquidity, since we receive the full amount of cash for the vehicle sales price at delivery. While we do not assume any credit risk related to the customer, if a customer exercises the option to return the vehicle to us, we are exposed to liquidity risk that the resale value of vehicles under these programs may be lower than our guarantee, or the volume of vehicles returned to us may be higher than our estimates or we may be unable to resell the used vehicles in a timely manner, all of which could adversely impact our cash flows. To date, we have only had an insignificant number of customers who exercised their resale value guarantees and returned their vehicles to us. However, resale prices may inherently fluctuate depending on various factors such as supply and demand of our used vehicles, economic cycles and the pricing of new vehicles. Should market values of our vehicles or customer demand decrease, the accuracy of our estimated rates of return may be impacted materially. As a result of pricing adjustments during the first quarter of 2019 as discussed above, we estimated a higher rate of return with respect to previously-delivered vehicles sold with a resale value guarantee, resulting in a net reduction in gross profit in such quarter. We adjusted our resale value guarantees for vehicles delivered subsequent to such pricing changes, for which we currently estimate the resale prices will continue to be above our associated resale value guarantee amounts.

We currently offer leasing directly through our local subsidiaries for Model S, Model X and Model 3 in the U.S. and for Model S and Model X in Canada. We also offer leasing through leasing partners in certain jurisdictions. Leasing through our captive financing entities and our leasing partners exposes us to residual value risk. In addition, for leases offered directly from our captive financing entities, we assume customer credit risk. We plan to continue expanding our financing offerings, including our lease financing options and the financial sources to support them, and to support the overall financing needs of our customers. To the extent that we are unable to arrange such options for our customers on terms that are attractive, our sales, financial results and cash flows could be negatively impacted.

Energy Generation and Storage Financing Options

We offer our customers the choice to either purchase and own solar energy systems or to purchase the energy that our solar energy systems produce through various contractual arrangements. These contractual arrangements include long-term leases and PPAs. In both structures, we install our solar energy systems at our customer’s premises and charge the customer a monthly fee, which alternatively may be prepaid at the customer’s option. In the lease structure, the monthly payment is fixed with a minimum production guarantee. In the PPA structure, we charge customers a fee per kilowatt-hour, or kWh, based on the amount of electricity the solar energy system actually produces. The leases and PPAs are typically for 20 years with a renewal option, and the specified monthly fees may be subject to annual escalations.

For customers who want to purchase and own solar energy systems, we also offer solar loans, whereby a third-party lender provides financing directly to a qualified customer to enable the customer to purchase and own a solar energy system designed, installed and serviced by us. We enter into a standard solar energy system sale and installation agreement with the customer. Separately, the customer enters into a loan agreement with a third-party lender, who finances the full purchase price. We are not a party to the loan agreement between the customer and the third-party lender, and the third-party lender has no recourse against us with respect to the loan.

Gigafactory 1

We continue to develop Gigafactory 1 as a facility where we work together with our suppliers to integrate production of battery material, cells, modules, battery packs and drive units in one location for vehicles and energy storage products. We also continue to invest and will invest in Gigafactory 1 in the future to achieve additional production output there. Panasonic has partnered with us on Gigafactory 1 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 these terms convey a finance lease, as defined in

ASC 842, Leases, we consider their production equipment to be leased assets when production commences. This results in us recording the value of their production equipment within property, plant and equipment, net, on the consolidated balance sheets with a corresponding liability recorded to long-term debt and finance leases. For all suppliers and partners for which we plan to purchase the full output from their production equipment located at Gigafactory 1, we will apply similar accounting. During the three months ended March 31, 2019, we recorded $173.1 million on the consolidated balance sheet.

While we currently believe that our progress at Gigafactory 1 will allow us to reach our production targets, our ultimate ability to do so will require us to resolve the types of challenges that are typical of a production ramp. For example, we have in the past experienced bottlenecks in the assembly of battery modules and cell output at Gigafactory 1, which impacted our production of Model 3. While we continue to resolve such issues at Gigafactory 1 as they arise, given the size and complexity of this undertaking, it is possible that future events could result in the cost of building and operating Gigafactory 1 exceeding our current expectations and Gigafactory 1 taking longer to expand than we currently anticipate.

Gigafactory 2

We have an agreement with the SUNY Foundation related to the construction of a facility in Buffalo, New York, referred to as Gigafactory 2, where we have housed the development and production of solar products and components. The terms of such agreement require us to comply with a number of covenants, including that specified portions of the total jobs required to be employed directly by Tesla in the state of New York and the total cumulative investment required to be made by Tesla be met by April 30, 2019, the first anniversary of the SUNY Foundation's substantial completion of its construction work at the facility. We fully expect to meet these covenants on time and will report our current status to the SUNY Foundation following such anniversary. Overall, we expect our significant operations at Gigafactory 2 and the surrounding Buffalo area to continue, including our ramp and manufacture of Solar Roof, which we are planning to scale over the remainder of 2019 and into 2020, as well as certain product development and other Tesla operations. In addition, Panasonic manufactures PV cells and modules at Gigafactory 2, which are among our various sources for our solar retrofit installations.

Although we remain on track with our covenants with the SUNY Foundation with respect to Tesla's progress at and plans for Buffalo, any failure to comply with these covenants could obligate us to pay significant amounts to the SUNY Foundation and result in termination of the agreement. Our expectations as to the costs and timelines of our investment and operations at Buffalo, including those associated with acquiring equipment and supporting our operations with respect to our production of Solar Roof there, may prove incorrect, which could subject us to significant expenses to achieve the desired benefits.

Gigafactory Shanghai

We are constructing Gigafactory Shanghai in order to increase the affordability of Model 3 for customers in China by reducing transportation and manufacturing costs and eliminating certain tariffs on vehicles imported from the U.S. We broke ground in January 2019, and subject to a number of uncertainties, including regulatory approval, supply chain constraints, and the pace of installing production equipment and bringing the factory online, we expect to begin production of certain trims of Model 3 at Gigafactory Shanghai by the end of 2019. We expect much of the investment in Gigafactory Shanghai to be provided through local debt financing, including a RMB 3.5 billion term facility that our subsidiary entered into in March 2019, supported by limited direct capital expenditures by us. Moreover, we are targeting the capital expenditures per unit of production capacity at this factory to be less than that of our Model 3 production at the Tesla Factory, from which we have drawn learnings that should allow us to simplify our manufacturing layout and processes at Gigafactory Shanghai.

Other Manufacturing

We continue to expand production capacity at our existing facilities and construct our planned facilities, and continually explore additional production capacity internationally.

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 will be affected.

For a description of our critical accounting policies and estimates, refer to Note 2, Summary of Significant Accounting Policies, to the consolidated financial statements included elsewhere in this Quarterly Report on Form 10-Q.

Results of Operations

Revenues

(Dollars in thousands)	Three Months Ended March 31, 2019	2018	Change $	%
Automotive sales	$3,508,741	$2,561,881	$946,860	37 %
Automotive leasing	215,120	173,436	41,684	24 %
Total automotive revenues	3,723,861	2,735,317	988,544	36 %
Services and other	492,942	263,412	229,530	87 %
Total automotive & services and other segment revenue	4,216,803	2,998,729	1,218,074	41 %
Energy generation and storage segment revenue	324,661	410,022	(85,361)	-21%
Total revenues	$4,541,464	$3,408,751	$1,132,713	33 %

Automotive & Services and Other Segment

Automotive sales revenue includes revenues related to the sale of new Model S, Model X and Model 3 vehicles, including access to our Supercharger network, internet connectivity, Autopilot, full self-driving and over-the-air software updates, as well as sales of regulatory credits to other automotive manufacturers. Our revenue from non-ZEV regulatory credits generally follows our production and delivery trends as we have long-term contracts with existing customers for the sale of these credits. However, as we do not have long-term contracts for ZEV credit sales, revenue from sale of ZEV credits fluctuate by quarter depending on when a contract is executed with a buyer. For example, our revenue from ZEV credit sales in the three months ended December 31, 2017 was $179.1 million while it was $0.8 million in the three months ended December 31, 2018.

Automotive leasing revenue includes the amortization of revenue for Model S and Model X vehicles under direct lease agreements as well as those sold with resale value guarantees accounted for as operating leases under lease accounting. We began offering leasing for Model 3 vehicles in the second quarter of 2019.

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

Automotive sales revenue increased $946.9 million, or 37%, in the three months ended March 31, 2019 as compared to three months ended March 31, 2018, primarily due to an increase of approximately 42,750 Model 3 deliveries from our significant production ramp in the second half of 2018, delivered at average selling prices that remained relatively consistent year-over-year. Additionally, there was an increase of $170.6 million in sales of non-ZEV regulatory credits to $200.6 million in the three months ended March 31, 2019 compared to $30.0 million in the same period in the prior year. The above increases in revenue were offset by a decrease of approximately 8,610 Model S and Model X deliveries at lower average selling prices due to price adjustments we made to our vehicle offerings in the three months ended March 31, 2019. Additionally, due to these price adjustments, we estimated that there is a greater likelihood that customers will exercise their buyback options. As a result, we adjusted our sales return reserve on vehicles previously sold under our buyback options program resulting in a reduction of automotive sales revenues of $500.5 million. Refer to Note 2, Summary of Significant Accounting Policies, to the consolidated statements included elsewhere in the Quarterly Report on Form 10-Q.

Automotive leasing revenue increased $41.7 million, or 24%, in the three months ended March 31, 2019 as compared to the three months ended March 31, 2018. The increase was primarily due to an increase in cumulative vehicles under our direct vehicle leasing program and an increase in the number of vehicles under leasing programs where our counterparty has retained ownership of the vehicle during or at the end of the guarantee period when compared to the three months ended March 31, 2018. When our counterparty retains ownership, any remaining balances within deferred revenue and resale value guarantee are settled to automotive leasing revenue. These increases were partially offset by a decrease in cumulative vehicles under our resale value guarantee financing programs which are accounted for as operating leases.

Services and other revenue increased $229.5 million, or 87%, in the three months ended March 31, 2019 as compared to the three months ended March 31, 2018. The increase was primarily due to an increase in used vehicle sales from an increased volume of trade-in vehicles, partially offset by lower average selling prices for them due to price adjustments we made to our vehicle offerings in the current period and an increase in trade-ins of relatively lower priced non-Tesla vehicles. Additionally, there was an increase in non-warranty maintenance services revenue as our fleet continues to grow.

Energy Generation and Storage Segment

Energy generation and storage revenue includes sale of solar energy systems and energy storage products, leasing revenue from solar energy systems under operating leases and PPAs and the sale of solar energy systems incentives.

Energy generation and storage revenue decreased by $85.4 million, or 21%, in the three months ended March 31, 2019 as compared to the three months ended March 31, 2018. The decrease was primarily due to a decrease in revenue recognized for commercial projects, most predominantly $72.5 million for the South Australia battery project in the prior period, and a decrease in deployments of cash and loan solar projects. These decreases were partially offset by increases in deployments of Powerwall.

Cost of Revenues and Gross Margin

	Three Months Ended March 31,		Change	
(Dollars in thousands)	2019	2018	$	%
Cost of revenues				
Automotive sales	$2,856,209	$2,091,397	$764,812	37 %
Automotive leasing	117,092	104,496	12,596	12 %
Total automotive cost of revenues	2,973,301	2,195,893	777,408	35 %
Services and other	685,533	380,969	304,564	80 %
Total automotive & services and other segment cost of revenues	3,658,834	2,576,862	1,081,972	42 %
Energy generation and storage segment	316,887	375,363	(58,476)	-16%
Total cost of revenues	$3,975,721	$2,952,225	$1,023,496	35 %
Gross profit total automotive	$750,560	$539,424		
Gross margin total automotive	20 %	20 %		
Gross profit total automotive & services and other segment	$557,969	$421,867		
Gross margin total automotive & services and other segment	13 %	14 %		
Gross profit energy generation and storage segment	$7,774	$34,659		
Gross margin energy generation and storage segment	2 %	8 %		
Total gross profit	$565,743	$456,526		
Total gross margin	12 %	13 %		

Automotive & Services and Other Segment

Cost of automotive sales revenue includes direct parts, material and 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 primarily the amortization of operating lease vehicles over the lease term, as well as warranty expenses recognized as incurred. 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.

Costs of services and other revenue includes costs associated with providing non-warranty after-sales services, costs to acquire and certify used vehicles, and costs for retail merchandise. Cost of services and other revenue also includes direct parts, material and labor costs, manufacturing overhead associated with the sales of electric vehicle components and systems to other manufacturers and sales by our acquired subsidiaries to third party customers.

Cost of automotive sales revenue increased $764.8 million, or 37%, in the three months ended March 31, 2019 as compared to the three months ended March 31, 2018, primarily due to an increase of approximately 42,750 Model 3 deliveries from our significant production ramp in the second half of 2018. The increase was partially offset by significant reductions in Model 3 average costs per unit compared to the prior period primarily due to temporary under-utilization of manufacturing capacity at lower production volumes in the first half of 2018 and other cost efficiencies. Additionally, due to price adjustments we made to our vehicle offerings during the three months ended March 31, 2019, we estimated that there is a greater likelihood that customers will exercise their buyback options. If customers elect to exercise the buyback option, we expect to be able to subsequently resell the returned vehicles, which resulted in a reduction of automotive cost of sales of $408.8 million. Refer to Note 2, Summary of Significant Accounting Policies, to the consolidated statements included elsewhere in the Quarterly Report on Form 10-Q.

Cost of automotive leasing revenue increased $12.6 million, or 12%, in the three months ended March 31, 2019 compared to the three months ended March 31, 2018. The increase was primarily due to an increase in cumulative vehicles under our direct vehicle leasing program and an increase in the number of vehicles under leasing programs where our counterparty has retained ownership of the vehicle during or at the end of the guarantee period when compared to the prior period. When our counterparty retains ownership, the net book value of the leased vehicle of the lease vehicle is expensed to cost of automotive leasing revenue. These increases were partially offset by a decrease in our leasing portfolio under resale value guarantee financing programs that qualify under lease treatment.

Cost of services and other revenue increased $304.6 million, or 80%, in the three months ended March 31, 2019 as compared to the three months ended March 31, 2018. The increase was primarily due to the cost of used vehicle sales from the increased volume of trade-in vehicles. Additionally, there was an increase in the cost of our new service centers, additional service personnel in existing and new service centers, Mobile Service capabilities, parts distribution centers and investment in new body shops to provide maintenance services to our rapidly growing fleet of vehicles.

Gross margin for total automotive remained relatively consistent at 20% in the three months ended March 31, 2019 and 2018. Model 3 margins improved compared to the prior period as we achieved significant manufacturing efficiencies in the production of Model 3 in the second half of 2018. This increase was partially offset by lower Model S and Model X deliveries at lower margins due to lower average selling prices from price adjustments we made to our vehicle offerings in the three months ended March 31, 2019. Additionally, the price adjustments also resulted in a reduction in gross automotive sales profit of $91.7 million from the adjustment of our sales return reserve on vehicles previously sold under our buyback options program.

Gross margin for total automotive & services and other segment decreased from 14% to 13% in the three months ended March 31, 2019 compared to the three months ended March 31, 2018 primarily due to the automotive gross margin impacts discussed above.

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. In addition, where arrangements are accounted for as operating leases, 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

Cost of energy generation and storage revenue decreased by $58.5 million, or 16%, in the three months ended March 31, 2019 as compared to the three months ended March 31, 2018 The decrease was primarily due to a decrease in cost of revenue for commercial energy storage projects, most predominantly $72.5 million for the South Australia battery project in the prior period, and a decrease in cost of revenue for cash and loan solar projects from lower deployments. These decreases were partially offset by increases in cost of revenue for Powerwall from increased deployments, increases in costs for our cash and loan solar energy system projects and higher costs from temporary manufacturing under-utilization of our Solar Roof ramp.

Gross margin for energy generation and storage decreased from 8% to 2% in the three months ended March 31, 2019 compared to the three months ended March 31, 2018. The decrease was primarily due to lower margins in our cash and loan solar energy system business driven by higher fixed costs per project as a result of lower deployments in the three months ended March 31, 2019. Additionally, higher costs from temporary manufacturing under-utilization of our Solar Roof ramp have further contributed to a decrease in margins.

Research and Development Expense

	Three Months Ended March 31,		Change	
(Dollars in thousands)	2019	2018	$	%
Research and development	$ 340,174	$ 367,096	$(26,922)	-7%
As a percentage of revenues	7 %	11 %		

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 decreased $26.9 million, or 7%, in the three months ended March 31, 2019 compared to the three months ended March 31, 2018. The decrease was primarily due to a $20.3 million decrease in employee and labor related expenses from cost efficiency initiatives and a $10.7 million decrease in professional and outside service expenses, offset by an $11.4 million increase in stock-based compensation expense.

Selling, General and Administrative Expense

	Three Months Ended March 31,		Change	
(Dollars in thousands)	2019	2018	$	%
Selling, general and administrative	$ 703,929	$ 686,404	$17,525	3%
As a percentage of revenues	16 %	20 %		

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 $17.5 million, or 3%, in the three months ended March 31, 2019 as compared to the three months ended March 31, 2018. The increase was primarily due to a $51.6 million increase in stock-based compensation expense related to the 2018 CEO Performance Award and stock awards granted for new hires and refresher employee stock grants, partially offset by a $27.8 million decrease in employee and labor related expenses from decreased headcount and certain other expenses.

Restructuring and other

	Three Months Ended March 31,		Change	
(Dollars in thousands)	2019	2018	$	%
Restructuring and other	$ 43,471	$ —	$43,471	N/A
As a percentage of revenues	1 %	0 %		

During the first quarter of 2019, we carried out certain restructuring actions in order to reduce costs and improve efficiency. As a result, we recognized $43.5 million of costs primarily related to employee termination expenses and losses from closing certain stores. These costs were substantially paid by the end of first quarter of 2019. The restructuring actions during the first quarter of 2019 will result in an estimated cost savings of approximately $180.0 million for the remainder of 2019.

There were no restructuring actions in the three months ended March 31, 2018.

Interest Expense

	Three Months Ended March 31,		Change	
(Dollars in thousands)	2019	2018	$	%
Interest expense	$ (157,453)	$ (149,546)	$(7,907)	5%
As a percentage of revenues	3 %	4 %		

Interest expense increased by $7.9 million, or 5%, in the three months ended March 31, 2019 as compared to the three months ended March 31, 2018. The increase was primarily due to a decrease of $10.5 million in the amount of interest we capitalized from the consolidated statement of operations to property, plant, and equipment on the consolidated balance sheets. Lower capitalization results in higher interest expense. The amount of interest we capitalize is driven by our construction in progress balance, which decreased year-over-year due to our declining Model 3 capital expenditure ramp.

Other Income (Expense), Net

	Three Months Ended March 31,		Change	
(Dollars in thousands)	2019	2018	$	%
Other income (expense), net	$ 25,750	$ (37,716)	$63,466	Not meaningful
As a percentage of revenues	1 %	-1 %		

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 $63.5 million to a gain of $25.8 million in the three months ended March 31, 2019 from a loss of $37.7 million in the three months ended March 31, 2018. The change was primarily due to favorable fluctuations in foreign currency exchange rates, offset by losses from interest rate swaps related to our debt facilities when compared to the prior period.

Provision for Income Taxes

(Dollars in thousands)	Three Months Ended March 31, 2019	2018	Change $	%
Provision for income taxes	$ 22,873	$ 5,605	$17,268	308%
Effective tax rate	-4 %	-1 %		

Our provision for income taxes increased by $17.3 million, or 308%, in the three months ended March 31, 2019 as compared to the three months ended March 31, 2018. The increase was primarily due to the increase in taxable profits in certain foreign jurisdictions year-over-year.

Net Income (Loss) Attributable to Noncontrolling Interests and Redeemable Noncontrolling Interests

(Dollars in thousands)	Three Months Ended March 31, 2019	2018	Change $	%
Net income (loss) attributable to noncontrolling interests and redeemable noncontrolling interests in subsidiaries	$ 34,490	$ (75,076)	$109,566	Not meaningful

Our net income (loss) attributable to noncontrolling interests and redeemable noncontrolling interests was related to financing fund arrangements. The increase is mainly due to lower activity in our financing fund arrangements and a charge related to buyout of noncontrolling interests.

Liquidity and Capital Resources

As of March 31, 2019, we had $2.20 billion of cash and cash equivalents. Balances held in foreign currencies had a U.S. dollar equivalent of $410.1 million and consisted primarily of Chinese yuan, Norwegian kroner, and euros. Our sources of cash are predominantly from our deliveries of vehicles, sales and installations of our energy storage products and solar energy systems, proceeds from debt facilities, proceeds from financing funds and proceeds from equity offerings.

Our sources of liquidity and cash flows enable us to fund ongoing operations, research and development projects for new products, development of our main projects including Gigafactory Shanghai, Model Y and Tesla Semi, and expansion of our Supercharger and vehicle service and repair networks. We currently expect total 2019 capital expenditures to be approximately $2.0 to $2.5 billion.

In 2019 and beyond, we will continue to utilize our increasing experience and learnings from past and current product ramps to do so at a level of capital efficiency per dollar of spend that we expect to be significantly greater than historical levels. For example, based on our experience with ramping Model 3 at the Tesla Factory, we expect that the capital spend per unit of Model 3 manufacturing capacity at Gigafactory Shanghai will be less than that of our line in Fremont. Likewise, based on such experience and the substantial commonality of components we expect between Model Y and Model 3, we believe that the production ramp of Model Y will be significantly faster than that of Model 3 and cost less per unit of manufacturing capacity than that of Model 3 at Fremont. Considering the pipeline of new

products planned at this point, and consistent with our current strategy of using a partner to manufacture cells, as well as considering all other infrastructure growth and investments in Gigafactory 1, Gigafactory 2 and Gigafactory Shanghai, we currently estimate that capital expenditures will be between $2.5 to $3.0 billion annually for the next two fiscal years. Moreover, we expect that the cash we generate from our core operations will generally be sufficient to cover our future capital expenditures and to pay down our near-term debt obligations, although we may choose to seek alternative financing sources. For example, we expect that much of our investment in Gigafactory Shanghai will be funded through indebtedness arranged through local financial institutions in China, including a RMB 3.5 billion term facility that our subsidiary entered into in March 2019. As always, we continually evaluate our capital expenditure needs and may decide it is best to raise additional capital to fund the rapid growth of our business.

We have an agreement to spend or incur $5.0 billion in combined capital, operational expenses, costs of goods sold and other costs in the State of New York during the 10-year period following SUNY Foundation’s substantial completion of its construction work at Gigafactory 2. We anticipate meeting these obligations through our operations at this facility and other operations within the State of New York, and we do not believe that we face a significant risk of default.

We expect that our current sources of liquidity together with our projection of cash flows from operating activities will provide us with adequate liquidity over at least the next 12 months. A large portion of our future expenditures is to fund our growth, and we can adjust our capital and operating expenditures by operating segment, including future expansion of our product offerings and our Supercharger and vehicle service and repair networks. We may need or want to raise additional funds in the future, and these funds may not be available to us when we need or want them, or at all. If we cannot raise additional funds when we need or want them, our operations and prospects could be negatively affected.

In addition, we had $2.11 billion of unused committed amounts under our credit facilities and financing funds as of March 31, 2019, some of which 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, our interests in financing funds or various other assets; and contributing or selling qualified solar energy systems and the associated customer contracts or qualified leased vehicles and our interests in those leases into the financing funds). Upon the draw-down of any unused committed amounts, there are no restrictions on the use of such funds for general corporate purposes. For details regarding our indebtedness and financing funds, refer to Note 10, Long-Term Debt Obligations, and Note 14, Variable Interest Entity Arrangements, to the consolidated financial statements included elsewhere in this Quarterly Report on Form 10-Q.

Summary of Cash Flows

	Three Months Ended March 31,	
(Dollars in thousands)	2019	2018
Net cash used in operating activities	$(639,606)	$(398,376)
Net cash used in investing activities	$(305,843)	$(728,637)
Net cash (used in) provided by financing activities	$(653,019)	$371,660

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, especially inventory, which includes vehicles in transit. Our operating cash inflows include cash from vehicle sales, lease payments directly from customers, customer deposits, 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, employee compensation, operating lease payments and interest payments on our financings.

Net cash used in operating activities increased by $241.2 million to $639.6 million during the three months ended March 31, 2019 from $398.4 million during the three months ended March 31, 2018. This unfavorable change was primarily due to the increase in net operating assets and liabilities of $350.7 million and $188.1 million of the repayment of our 0.25% Convertible Senior Notes due in 2019 was classified as an operating activity, as this represented an interest payment on the discounted convertible notes. These unfavorable changes were partially offset by the increase in net income, excluding non-cash expenses and gains, of $297.6 million. The increase in net operating assets and liabilities was mainly driven by an increase in inventory, as a result of an increase in Model 3 production, and a decrease in accounts payable and accrued liabilities. The decrease in cash from certain operating activities was partially offset by an increase in deferred revenue, as a result of increased Model 3 deliveries and receipt of regulatory credits which will be delivered at a future date.

Cash Flows from Investing Activities

Cash flows from investing activities and their variability across each period related primarily to capital expenditures, which were $305.8 million during the three months ended March 31, 2019 and $728.6 million during the three months ended March 31, 2018. Capital expenditures during the three months ended March 31, 2019 were primarily comprised

of $279.9 million in purchases of property and equipment, mainly for Model 3 production, and $25.3 million for the design, acquisition and installation of solar energy systems with customers.

Capital expenditures during the three months ended March 31, 2018 were $655.7 million from purchases of property and equipment, mainly for Model 3 production, and $73.0 million for the design, acquisition and installation of solar energy systems with customers.

In 2014, we began construction of Gigafactory 1. We used $67.8 million and $173.3 million of cash towards Gigafactory 1 construction during the three months ended March 31, 2019 and 2018, respectively.

Cash Flows from Financing Activities

Cash flows used in financing activities during the three months ended March 31, 2019 consisted primarily of a $731.9 million portion of the repayment of our 0.25% Convertible Senior Notes due in 2019 that was classified as financing activity, collateralized lease repayments of $133.9 million, and repayments of $115.2 million of the automotive asset-backed notes. These cash outflows were partially offset by $316.0 million of net borrowings under the senior secured asset-based revolving credit agreement (the "Credit Agreement") and $82.2 million of net borrowings under our vehicle lease-backed loan and security agreements (the "Warehouse Agreements"). See Note 10, Long-Term Debt Obligations, and Note 2, Summary of Significant Accounting Policies, to the consolidated financial statements included elsewhere in this Quarterly Report on Form 10-Q for further details regarding our debt obligations and collateralized borrowings, respectively.

Cash flows from financing activities during the three months ended March 31, 2018 consisted primarily of $546.1 million from the issuance of automobile lease-backed notes and $177.0 million of net borrowings under the Credit Agreement. Additionally, there were net repayments of $337.6 million under the Warehouse Agreements.

Contractual Obligations

Contractual obligations did not materially change during the three months ended March 31, 2019 except for debt activity and lease activity, as discussed in more detail in Note 10, Long-Term Debt Obligations and Note 11, Leases.

Off-Balance Sheet Arrangements

During the periods presented, we did not have relationships with unconsolidated entities or financial partnerships, such as entities often referred to as structured finance or special purpose entities, which were established for the purpose of facilitating off-balance sheet arrangements or other contractually narrow or limited purposes.

Recent Accounting Pronouncements

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

ITEM 3. 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 and operating expenses denominated in currencies other than the U.S. dollar primarily the euro, Japanese yen, Canadian dollar, Chinese yuan and Norwegian krone. In general, we are a net receiver of currencies other than the U.S. dollar for our foreign subsidiaries. Accordingly, changes in exchange rates and, in particular, a strengthening of the U.S. dollar have in the past, and may in the future, negatively affect our revenue and other operating results as expressed in U.S. dollars.

We have also experienced, and will continue to experience, fluctuations in our net income (loss) 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). For the three months ended March 31, 2019, we recognized a net foreign currency gain of $39.1 million in other income (expense), net, with our largest re-measurement exposures from the U.S. dollar, euro and Chinese yuan as our subsidiaries are denominated in various local currencies. For the three months ended March 31, 2018, we recognized a

net foreign currency loss of $47.7 million in other income (expense), net, with our largest re-measurement exposures from the euro, Japanese yen and Canadian dollar.

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 income (loss) before income taxes. These changes would have resulted in an adverse impact of $239.9 million at March 31, 2019 and $175.7 million at December 31, 2018.

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 our interest rates would have increased our interest expense for the three months ended March 31, 2019 and 2018 by $2.3 million and $1.5 million, respectively.

ITEM 4. 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 March 31, 2019, 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 Securities and Exchange Commission 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.

Changes in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting, as identified in connection with the evaluation required by Rule 13a-15(d) and Rule 15d-15(d) of the Exchange Act, that occurred during the three months ended March 31, 2019 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

PART II. OTHER INFORMATION

ITEM 1. LEGAL PROCEEDINGS

For a description of our material pending legal proceedings, please see Note 13, Commitments and Contingencies, to the consolidated financial statements included elsewhere in this Quarterly Report on Form 10-Q.

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 Business and Industry

We have experienced in the past, and may experience in the future, delays or other complications in the design, manufacture, launch, production, delivery and servicing ramp of new vehicles and energy products, as well as product features, which could harm our brand, business, prospects, financial condition and operating results.

We have previously experienced launch, manufacturing, production and delivery ramp delays or other complications in connection with new vehicle models such as Model S, Model X and Model 3, new vehicle features such as the all-wheel drive dual motor drivetrain on Model S and the second version of Autopilot hardware, and a significant increase in automation introduced in the manufacture of Model 3. For example, we encountered unanticipated challenges, such as certain supply chain constraints, that led to initial delays in producing Model X. Similarly, we experienced certain challenges in the production of Model 3 that led to delays in its ramp. Moreover, in the areas of Model 3 production where we had challenges ramping fully automated processes, such as portions of the battery module assembly line, material flow system and the general assembly line, we reduced the levels of automation and introduced semi-automated or manual processes, and we have also had to address an isolated supplier limitation in the manufacture of Model 3. If issues like these arise or recur, if our remediation measures and process changes do not continue to be successful, if we experience issues with transitioning to full automation in certain production lines or to other planned manufacturing improvements, or if we experience issues or delays in building our Gigafactory Shanghai in China or commencing and ramping Model 3 production there, we could experience issues in sustaining the Model 3 ramp or delays in increasing Model 3 production further, including the introduction of new variants. Also, if we encounter difficulties in scaling our delivery or servicing capabilities for Model 3 or future vehicles and products to high volumes in the U.S. or internationally, our financial condition and operating results could suffer. In addition, because our vehicle models share certain production facilities with other vehicle models, the volume or efficiency of production with respect to one model may impact the production of other models or lead to bottlenecks that impact the production of all models.

We may also experience similar future delays or other complications in bringing to market and ramping production of new vehicles, such as Model Y, the Tesla Semi, our planned pickup truck and new Tesla Roadster, our energy storage products and Solar Roof, as well as future features and services such as full self-driving and the autonomous Tesla ride-hailing network. Any significant additional delay or other complication in the production of and delivery capabilities for our current products or the development, manufacture, launch, production and delivery and servicing capability ramp of our future products, features and services, including complications associated with expanding our production capacity, supply chain and delivery systems or obtaining or maintaining regulatory approvals, could materially damage our brand, business, prospects, financial condition and operating results.

We have experienced in the past, and may experience in the future, delays in realizing our projected timelines and cost and volume targets for the production and ramp of Model 3, which could harm our business, prospects, financial condition and operating results.

Our future business depends in large part on our ability to execute on our plans to manufacture, market and sell the Model 3 vehicle, which we are offering at a lower price point and which we are producing at significantly higher volumes than the Model S or Model X vehicles. We commenced production and initial customer deliveries of Model 3

in July 2017, and since then have achieved a stabilized production rate. At the Tesla Factory, we expect to continue to increase our Model 3 production rate to approximately 7,000 units per week on a sustained basis by the end of 2019. Moreover, in China, we expect to commence production of certain trims of Model 3 for the local market in China in the initial phase of our Gigafactory Shanghai by the end of 2019, and then progressively increase levels of localization through local sourcing and manufacturing. Inclusive of and dependent upon how quickly we can ramp Gigafactory Shanghai, our next milestone is to be able to produce at least 500,000 units of all vehicle models combined in a continuous 12-month period ending no later than June 30, 2020. However, the timeframe for commencing Model 3 production at Gigafactory Shanghai is subject to a number of uncertainties, including regulatory approval, supply chain constraints, and the pace of installing production equipment and bringing the factory online.

We have limited experience to date in manufacturing vehicles at the high volumes that we recently achieved and to which we anticipate ramping further for Model 3, and to be successful, we will need to complete the implementation and ramp of efficient and cost-effective manufacturing capabilities, processes and supply chains necessary to support such volumes, including at Gigafactory Shanghai. We are employing a higher degree of automation in the manufacturing processes for Model 3 than we have previously employed and to continue to implement additional automation. In some cases, we have temporarily reduced the levels of automation and introduced semi-automated or manual processes, at additional labor cost, and we have also had to address an isolated supplier limitation. Additional bottlenecks may also arise as we continue to ramp production at the Tesla Factory and commence the initial phase of Model 3 production at Gigafactory Shanghai, and it will be important that we address them promptly and in a cost-effective manner. Moreover, our Model 3 production plan has generally required to date significant investments of cash and management resources, and we are deploying certain additional resources as we further progress our ramp and begin production in new locations in the future, such as China.

Our production plan for Model 3 is based on many key assumptions, including:

- that we will be able to sustain and further expand our high-volume production of Model 3 at the Tesla Factory, including with the introduction of new variants, without exceeding our projected costs and on our projected timeline;
- that we will be able to continue to expand output at Gigafactory 1 in a timely manner to produce high volumes of quality lithium-ion cells to be integrated into battery modules and finished battery packs and drive unit components for Model 3, including in part to support production in China as the level of local sourcing and manufacturing there progressively increases, all at costs that allow us to sell Model 3 at our target gross margins;
- that we will be able to build and commence production at additional future facilities, such as at Gigafactory Shanghai, to support our international ramp for Model 3 in accordance with our projected timelines, costs and increased capital efficiency;
- that the equipment and processes which we have selected for Model 3 production will be able to accurately manufacture high volumes of the different variants of Model 3 within specified design tolerances and with high quality;
- that we will be able to maintain suppliers for the necessary components on terms and conditions that are acceptable to us and that we will be able to obtain high-quality components on a timely basis and in the necessary quantities to support high-volume production; and
- that we will be able to attract, recruit, hire, train and retain skilled employees to operate our planned high-volume production facilities to support Model 3, including at the Tesla Factory, Gigafactory 1 and Gigafactory Shanghai.

If one or more of the foregoing assumptions turns out to be incorrect, our ability to meet our Model 3 projections on time and at volumes and prices that are profitable, the demand for and deliveries of Model 3, as well as our business, prospects, operating results and financial condition, may be materially and adversely impacted.

We may be unable to meet our growing vehicle production, sales and delivery plans and servicing needs, any of which could harm our business and prospects.

Our plans call for sustaining and further ramping from our significant increases in vehicle production and deliveries, particularly for Model 3. Our ability to achieve these plans will depend upon a number of factors, including our ability to utilize installed manufacturing capacity to achieve the planned production yield, further install and increase capacity in accordance with our planned timelines and costs, maintain our desired quality levels and optimize design and production changes, as well as our suppliers' ability to support our needs. In addition, we have used and may use in the future a number of new manufacturing technologies, techniques and processes for our vehicles, which we must successfully introduce and scale for high-volume production. For example, we have introduced highly automated production lines, aluminum spot welding systems and high-speed blow forming of certain difficult to stamp vehicle parts. We have also introduced unique design features in our vehicles with different manufacturing challenges, such as large display screens, dual motor drivetrain, Autopilot hardware and falcon-wing doors. We have limited experience

developing, manufacturing, selling and servicing, and allocating our available resources among, multiple products simultaneously. If we are unable to realize our plans, our brand, business, prospects, financial condition and operating results could be materially damaged.

Concurrent with our increasing vehicle production levels, our success will depend on our ability to continue to significantly increase sales and deliveries of our vehicles. Although we have a plan for selling and delivering increased volumes of vehicles, we have limited experience in marketing, selling and delivering vehicles at the higher volumes at which we are manufacturing Model 3. We have announced a global shift to exclusively transact our vehicle sales through the Internet (except for limited inventory sales), and we are in the process of optimizing our retail operations at our stores accordingly. Such an approach has not traditionally been used to sell vehicles at volume. We may also face difficulties meeting our sales and delivery goals in both existing markets as well as new markets into which we expand, such as Europe and China where we saw challenges in initially ramping our logistical channels as we began to deliver Model 3 there for the first time in the first quarter of 2019. In particular, we are targeting for the first time with Model 3 a mass demographic with a broad range of potential customers, in which we have limited experience projecting demand and pricing our products. We produce variants (including regional versions) of Model 3 in batches in accordance with the demand that we expect for them, and we have long lead times associated with procuring certain parts and finite production capabilities at a single factory from which all Model 3 vehicles are shipped globally, including to destinations with long transit times. If our specific Model 3 demand expectations prove inaccurate, including as we continue to expand the markets in which we offer Model 3, we may not be able to timely generate sales matched to the specific vehicles that we produce in the same timeframe, which may negatively impact our deliveries in a particular period.

Moreover, because we do not have independent dealer networks, we are responsible for delivering all of our vehicles to our customers and meeting their vehicle servicing needs. To date, we have limited experience with such deliveries and servicing at the scale to which we expect to grow, particularly in international markets. To accommodate our volumes, we have deployed a number of delivery models, such as deliveries to customers' homes and workplaces, some of which have not been previously tested at scale and in different geographies. Moreover, significant transit time may be required to transport vehicles such as Model 3 in volume into new markets for the first time. To the extent that such factors lead to delays in our deliveries, our results may be negatively impacted. Finally, because of our unique expertise with our vehicles, we recommend that our vehicles be serviced by our service centers, Mobile Service technicians or certain authorized professionals that we have specifically trained and equipped. If we experience delays in adding such servicing capacity or experience unforeseen issues with the reliability of Model 3, which we recently commenced producing at volume, it could overburden our servicing capabilities. If we are unable to ramp up to meet our sales, delivery and servicing targets globally, or our projections on which such targets are based are inaccurate, this could result in negative publicity and damage to our brand and have a material adverse effect on our business, prospects, financial condition and operating results.

Our future growth and success is dependent upon consumers' willingness to adopt electric vehicles and specifically our vehicles, especially in the mass market demographic which we are targeting with Model 3.

Our growth is highly dependent upon the adoption by consumers of alternative fuel vehicles in general and electric vehicles in particular. Although we have successfully grown demand for our vehicles thus far, there is no guarantee of such future demand, or that our vehicles will not compete with one another in the market. Moreover, the Model 3 mass market demographic is larger, but more competitive, than the demographic for Model S and Model X, and additional electric vehicles are entering the market.

If the market for electric vehicles in general and Tesla vehicles in particular does not develop as we expect, or develops more slowly than we expect, or if demand for our vehicles decreases in our markets, our business, prospects, financial condition and operating results could be harmed. We have only recently begun high volume production of vehicles, are still at an earlier stage and have limited resources relative to our competitors, and the market for alternative fuel vehicles is rapidly evolving. As a result, the market for our vehicles could be 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;
- 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;
- government regulations and economic incentives;
- access to charging facilities; and
- concerns about our future viability.

We are dependent on our suppliers, the majority of which are single-source suppliers, and the inability of these suppliers to deliver necessary components of our products according to our schedule and at prices, quality levels and volumes acceptable to us, or our inability to efficiently manage these components, could have a material adverse effect on our financial condition and operating results.

Our products contain numerous purchased parts that we source globally from hundreds of direct suppliers. We attempt to mitigate our supply chain risk by entering into long-term agreements where it is practical and beneficial to do so, including agreements we entered into with Panasonic to be our manufacturing partner and supplier. Because the majority of our suppliers are currently single-source suppliers, we also minimize our risk when we can qualify and obtain components from multiple sources, such as with respect to PV panels for our retrofit solar installations, which we purchase from a variety of suppliers. However, any significant increases in our production may require us to procure additional components in a short amount of time, and in the past we have also replaced certain suppliers because of their failure to provide components that met our quality control standards. While we believe that we will be able to secure additional or alternate sources of supply for most of our components in a relatively short time frame, there is no assurance that we will be able to do so or develop our own replacements for certain highly customized components of our products. If we encounter unexpected difficulties with key suppliers such as Panasonic and if we are unable to fill these needs from other suppliers, we could experience production delays and potential loss of access to important technology and parts for producing, servicing and supporting our products.

This limited, and in many cases single-source, supply chain exposes us to multiple potential sources of delivery failure or component shortages for the production of our products, such as those which we experienced in 2012 and 2016 in connection with our slower-than-planned Model S and Model X ramps. Furthermore, unexpected changes in business conditions, materials pricing, labor issues, wars, governmental changes, tariffs, natural disasters such as the March 2011 earthquakes in Japan and other factors beyond our and our suppliers' control, could also affect our suppliers' ability to deliver components to us on a timely basis. The loss of any single- or limited-source supplier or the disruption in the supply of components from these suppliers could lead to product design changes and delays in product deliveries to our customers, which could hurt our relationships with our customers and result in negative publicity, damage to our brand and a material and adverse effect on our business, prospects, financial condition and operating results.

Changes in our supply chain have also resulted in the past, and may result in the future, in increased cost. We have also experienced cost increases from certain of our suppliers in order to meet our quality targets and development timelines as well as due to our design changes, and we may experience similar cost increases in the future. Certain suppliers have sought to renegotiate the terms of supply arrangements. Additionally, we are negotiating with existing suppliers for cost reductions, seeking new and less expensive suppliers for certain parts, and attempting to redesign certain parts to make them less expensive to produce. If we are unsuccessful in our efforts to control and reduce supplier costs, our operating results will suffer.

In particular, because we are producing Model 3 at significantly higher volumes than any of our other products to date, the negative impact of any delays or other constraints with respect to our suppliers for Model 3 could be substantially greater than any supply chain-related issues experienced with respect to our other products. We need our Model 3 suppliers to sustainably ramp in accordance with our ongoing ramp of the different variants of Model 3 and deliver according to our schedule. There is no assurance that these suppliers will ultimately be able to sustainably and timely meet our cost, quality and volume needs. For example, we may experience issues or delays increasing the level of localization in China through local sourcing and manufacturing at our Gigafactory Shanghai. Furthermore, as the scale of our vehicle production increases, we will need to accurately forecast, purchase, warehouse and transport to our manufacturing facilities components at much higher volumes. If we are unable to accurately match the timing and quantities of component purchases to our actual needs, including for our different model variants, or successfully implement automation, inventory management and other systems to accommodate the increased complexity in our

supply chain, we may incur unexpected production disruption, storage, transportation and write-off costs, which could have a material adverse effect on our financial condition and operating results.

Future problems or delays in expanding Gigafactory 1 or ramping operations there could negatively affect the production and profitability of our products, such as Model 3 and our energy storage products.

To lower the cost of cell production and produce cells in high volume, we have vertically integrated the production of lithium-ion cells and finished battery packs for Model 3 and energy storage products at Gigafactory 1. While Gigafactory 1 began producing lithium-ion cells for energy storage products in January 2017 and has since begun producing lithium-ion cells for Model 3, we have no other direct experience in the production of lithium-ion cells. Given the size and complexity of this undertaking, it is possible that future events could result in issues or delays in further ramping our products and expanding production output at Gigafactory 1. Moreover, we expect that we will need additional production output at Gigafactory 1 to support vehicle production at Gigafactory Shanghai in part when we commence Model 3 production there. In order to achieve our volume and gross margin targets for Model 3 and the anticipated ramp in production of energy storage products, we must continue to sustain and ramp significant cell production at Gigafactory 1, which, among other things, requires Panasonic to successfully operate and further ramp its cell production lines at significant volumes. Although Panasonic has a long track record of producing high-quality cells at significant volume at its factories in Japan, it has relatively limited experience with cell production at Gigafactory 1. In addition, we produce several components for Model 3, such as battery modules incorporating the lithium-ion cells produced by Panasonic, and drive units, at Gigafactory 1. Some of the manufacturing lines for such components took longer than anticipated to ramp to their full capacity. While we have largely overcome this bottleneck after deploying multiple semi-automated lines and improving our original lines, additional bottlenecks may arise as we continue to increase the production rate. If we are unable to maintain Gigafactory 1 production, ramp output additionally over time as needed, and do so cost-effectively, or if we or Panasonic are unable to attract, hire and retain a substantial number of highly skilled personnel, our ability to supply battery packs or other components for Model 3 and our other products could be negatively impacted, which could negatively affect our brand and harm our business, prospects, financial condition and operating results.

Any issues or delays in meeting our projected timelines, costs and production capacity for or funding the construction of Gigafactory Shanghai, or any difficulties in generating and maintaining local demand for vehicles manufactured there, could adversely impact our business, prospects, operating results and financial condition.

As part of our continuing work to increase Model 3 production on a sustained basis and make Model 3 affordable in the markets where we plan to offer it, we have begun construction of the initial phase of Gigafactory Shanghai and expect to commence production of certain trims of Model 3 for the local market in China by the end of 2019, and then progressively increase levels of localization through local sourcing and manufacturing. The timeframe for commencing Model 3 production at Gigafactory Shanghai is subject to a number of uncertainties, including regulatory approval, receipt and maintenance of certain manufacturing licenses, supply chain constraints, hiring and retention of qualified employees, and the pace of installing production equipment and bringing the factory online. We have limited experience to date with constructing manufacturing facilities abroad, and have only recently begun to sell Model 3 in China. If we experience any issues or delays in meeting our projected timelines, costs, capital efficiency and production capacity for Gigafactory Shanghai, or in securing and complying with the terms of local debt financing that we intend will largely fund its construction, or in generating and maintaining demand locally for the vehicles we manufacture at Gigafactory Shanghai, our business, prospects, operating results and financial condition could be adversely impacted.

If our vehicles or other products that we sell or install fail to perform as expected, our ability to develop, market and sell our products and services could be harmed.

If our vehicles or our energy products contain defects in design and manufacture that cause them not to perform as expected or that require repair, or certain features of our vehicles, such as full self-driving, take longer than expected to become enabled or are legally restricted, our ability to develop, market and sell our products and services could be

harmed. For example, the operation of our vehicles is highly dependent on software, which is inherently complex and may contain latent defects and errors or be subject to external attacks. Issues experienced by vehicle customers have included those related to the software for the 17 inch display screen, the panoramic roof and the 12-volt battery in the Model S and the seats and doors in the Model X. 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 be to the satisfaction of our customers. While we have performed extensive internal testing on the products we manufacture, we currently have a limited frame of reference by which to evaluate detailed long-term quality, reliability, durability and performance characteristics of our battery packs, powertrains, vehicles and energy storage products. 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 consumers.

Any product defects, delays or legal restrictions on product features, or other failure of our products to perform as expected, could harm our reputation and result in delivery delays, product recalls, product liability claims, and significant warranty and other expenses, and could have a material adverse impact on our business, financial condition, operating results and prospects.

If we fail to scale our business operations and otherwise manage future growth and adapt to new conditions effectively as we rapidly grow our company, including internationally, we may not be able to produce, market, sell and service our products successfully.

Any failure to manage our growth effectively could materially and adversely affect our business, prospects, operating results and financial condition. We expect to continue to expand our operations significantly, including internationally and with our increasing production of Model 3 and the worldwide sales, delivery and servicing of a significantly higher number of vehicles than our current vehicle fleet in the coming years. Furthermore, we are developing and growing our energy storage product and solar business worldwide, including in countries where we have limited or no previous operating experience. Our future operating results depend to a large extent on our ability to manage our expansion and growth successfully and to correctly forecast demand for our products in different markets. We may not be successful in undertaking this global expansion if we are unable to control expenses and avoid cost overruns and other unexpected operating costs, establish sufficient worldwide service and Supercharger facilities in a timely manner, adapt our products and conduct our operations to meet local requirements, implement required local infrastructure, systems and processes, and find and hire a significant number of additional manufacturing, engineering, service, electrical installation, construction and administrative personnel.

In particular, we plan to expand our manufacturing capabilities outside of the U.S., where we have limited experience operating a factory or managing related regulatory, financing and other challenges. For example, local manufacturing is critical to our expansion and sales in China, which is the largest market for electric vehicles in the world. Our sales of Model S and Model X in China have been negatively impacted by certain tariffs on automobiles manufactured in the U.S., such as our vehicles, and our costs for producing our vehicles in the U.S. have also been affected by import duties on certain components sourced from China. If we are not able to establish manufacturing activities in China and other jurisdictions to minimize the impact of such unfavorable tariffs, duties or costs, or ramp our production capabilities at Gigafactory 1 or other facilities to support such vehicle manufacturing activities, our ability to compete in such jurisdictions, and our operating results, business and prospects, will be harmed.

If we are unable to achieve our targeted manufacturing costs for our vehicles, including Model 3, our financial condition and operating results will suffer.

While we are continuing to and expect in the future to realize cost reductions by both us and our suppliers, there is no guarantee we will be able to achieve sufficient cost savings to reach our gross margin and profitability goals, including for the least expensive variant of Model 3 that we have begun to produce, or our other financial targets. We incur significant costs related to procuring the materials required to manufacture our vehicles, assembling vehicles and compensating our personnel. If our efforts to continue to decrease manufacturing costs are not successful, we may incur substantial costs or cost overruns in utilizing and increasing the production capability of our vehicle manufacturing facilities, such as for Model 3 both in the U.S. and internationally. Many of the factors that impact our manufacturing costs are beyond our control, such as potential increases in the costs of our materials and components, such as lithium, nickel and other components of our battery cells or aluminum used to produce body panels. If we are unable to continue to control and reduce our manufacturing costs, our operating results, business and prospects will be harmed.

Increases in costs, disruption of supply or shortage of materials, in particular for lithium-ion cells, could harm our business.

We may experience increases in the cost or a sustained interruption in the supply or shortage of materials. Any such increase, supply interruption or shortage could materially and negatively impact our business, prospects, financial condition and operating results. We use various materials in our business including aluminum, steel, lithium, nickel, copper and cobalt, as well as lithium-ion cells from suppliers. 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 production of electric vehicles and energy storage products by our competitors, and could adversely affect our business and operating results. For instance, we are exposed to multiple risks relating to lithium-ion cells. These risks include:

- an increase in the cost, or decrease in the available supply, of materials used in the cells;
- disruption in the supply of cells due to quality issues or recalls by battery cell manufacturers or any issues that may arise with respect to cells manufactured at our own facilities; and
- fluctuations in the value of the Japanese yen against the U.S. dollar as our battery-cell purchases for Model S and Model X and some raw materials for cells used in Model 3 and energy storage products are currently denominated in Japanese yen.

Our business is dependent on the continued supply of battery cells for the battery packs used in our vehicles and energy storage products. While we believe several sources of the battery cells are available for such battery packs, and expect to eventually rely substantially on battery cells manufactured at our own facilities, we have to date fully qualified only a very limited number of suppliers for the cells used in such battery packs and have very limited flexibility in changing cell suppliers. Any disruption in the supply of battery cells from such suppliers could disrupt production of our vehicles and of the battery packs we produce for energy products until such time as a different supplier is fully qualified. Furthermore, fluctuations or shortages in petroleum and other economic conditions may cause us to experience significant increases in freight charges and material costs. Substantial increases in the prices for our materials or prices charged to us, such as those charged by battery cell suppliers, would increase our operating costs, and could reduce our margins if we cannot recoup the increased costs through increased vehicle prices. Any attempts to increase vehicle prices in response to increased material costs could result in cancellations of vehicle orders and reservations and therefore materially and adversely affect our brand, image, business, prospects and operating results.

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

Although we design our vehicles to be the safest vehicles on the road, product liability claims, even those without merit, could harm our business, prospects, operating results and financial condition. The automobile industry in particular experiences significant product liability claims and we face inherent risk of exposure to 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 cars have been involved and we expect in the future will be involved in crashes resulting in death or personal injury, and such crashes where Autopilot is engaged are the subject of significant public attention. We have experienced and we expect to continue to face claims arising from or related to misuse or claimed failures of new technologies that we are pioneering, including Autopilot in our vehicles. Moreover, as our solar energy systems and energy storage products generate and store electricity, they have the potential to cause injury to people or property. A successful product liability claim against us could require us to pay a substantial monetary award. Our risks in this area are particularly pronounced given the relatively limited number of vehicles and energy storage products delivered to date and limited field experience of our products. Moreover, a product liability claim could generate substantial negative publicity about our products and business and could have a material adverse effect on our brand, business, prospects and operating results. 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, not by insurance.

The markets in which we operate are highly competitive, and we may not be successful in competing in these industries. We currently face competition from new and established domestic and international competitors and expect to face competition from others in the future, including competition from companies with new technology.

The worldwide automotive market, particularly for alternative fuel vehicles, is highly competitive today and we expect it will become even more so in the future. There is no assurance that our vehicles will be successful in the respective markets in which they compete. 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 alternative fuel vehicle market, including hybrid, plug-in hybrid and fully electric vehicles, as well as the market for self-driving technology and applications. In some cases, such competitors have announced an intention to produce electric vehicles exclusively at some point in the future. Most of our current and potential competitors have significantly greater financial, technical, manufacturing, marketing, vehicle sales resources and networks than we do and may be able to devote greater resources to the design, development, manufacturing, distribution, promotion, sale and support of their products. In particular, some competitors have also announced plans to compete with us in important and large markets for electric vehicles, such as China. Increased competition could result in lower vehicle unit sales, price

reductions, revenue shortfalls, loss of customers and loss of market share, which could harm our business, prospects, financial condition and operating results. In addition, our Model 3 vehicle faces competition from existing and future automobile manufacturers in the extremely competitive entry-level premium sedan market, including Audi, BMW, Lexus and Mercedes.

The solar and energy storage industries are highly competitive. We face competition from other manufacturers, developers and installers of solar and energy storage systems, as well as from large utilities. Decreases in the retail 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 customer defaults under our existing long-term leases and PPAs. Moreover, solar product component and lithium-ion battery prices have declined and are continuing to decline, which may adversely impact our ability to cost-effectively manufacture such components ourselves.

If we are unable to establish and maintain confidence in our long-term business prospects among consumers, analysts and within our industries, then our financial condition, operating results, business prospects and stock price may suffer materially.

Consumers may be less likely to purchase our products if they are not convinced that our business will succeed or that our service and support and other operations will continue in the long term. Similarly, suppliers and other third parties will be less likely to invest time and resources in developing business relationships with us if they are not convinced that our business will succeed. Accordingly, in order to build and maintain our business, we must maintain confidence among customers, suppliers, analysts, ratings agencies and other parties in our long-term financial viability and business prospects. Maintaining such confidence may be particularly complicated by certain factors, such as our limited operating history, negative press, customer unfamiliarity with our products, any delays 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 any other negative publicity related to us. Many of these factors are largely outside our control, and any negative perceptions about our long-term business prospects, even if exaggerated or unfounded, such as speculation regarding the sufficiency or stability of our management team, could harm our business and make it more difficult to raise additional funds if needed.

Our plan to generate ongoing growth and demand, including by expanding and optimizing our vehicle service and charging operations and infrastructure, will require significant cash investments and management resources and may not meet expectations with respect to additional sales, installations or servicing of our products or availability of public charging solutions.

We plan to generate ongoing growth and demand, including by globally expanding and optimizing our vehicle service and charging operations and infrastructure. These plans require significant cash investments and management resources and may not meet our expectations with respect to additional sales or installations of our products. This ongoing global expansion, which includes planned entry into markets in which we have limited or no experience selling, delivering, installing and/or servicing our products at scale, and which may pose legal, regulatory, labor, cultural and political challenges that we have not previously encountered, may not have the desired effect of increasing sales and installations and expanding our brand presence to the degree we are anticipating. Furthermore, the increasing number of Tesla vehicles will require us to continue to increase the number of our Supercharger stations and connectors significantly in locations throughout the world. If we fail to do so in a timely manner, our customers could become dissatisfied, which could adversely affect sales of our vehicles. We will also need to ensure we are in compliance with any regulatory requirements applicable to the sale, installation and service of our products, the sale of electricity generated through our solar energy systems and operation of Superchargers in those jurisdictions, which could take considerable time and expense. If we experience any delays or cannot meet customer expectations in expanding our customer infrastructure network, or our expansion plans are not successful in continuing to grow demand, this could lead to a decrease or stagnation in sales or installations of our products and could negatively impact our business, prospects, financial condition and operating results.

We face risks associated with our global operations and expansion, including unfavorable regulatory, political, economic, tax and labor conditions, and with establishing ourselves in new markets, all of which could harm our business.

We currently have a global footprint, with domestic and international operations and subsidiaries in various countries and jurisdictions, and we continue to expand and optimize our vehicle service and charging capabilities internationally. Accordingly, we are subject to a variety of legal, political and regulatory requirements and social and economic conditions over which we have little control. For example, we may be impacted by trade policies, political uncertainty and economic cycles involving geographic regions where we have significant operations. Sales of vehicles

in the automotive industry also tend to be cyclical in many markets, which may expose us to increased volatility as we expand and adjust our operations and retail strategies.

We are subject to a number of risks associated in particular with international business activities that may increase our costs, impact our ability to sell our products and require significant management attention. These risks include conforming our products to various international regulatory and safety requirements as well as charging and other electric infrastructures, organizing local operating entities, difficulty in establishing, staffing and managing foreign operations, challenges in attracting customers, foreign government taxes, regulations and permit requirements, our ability to enforce our contractual rights; trade restrictions, customs regulations, tariffs and price or exchange controls, and preferences of foreign nations for domestically manufactured products. For example, in China, which is a key market for us, certain products such as automobiles manufactured in the U.S. have become subject to a recently increased tariff imposed by the government. While such increase has been temporarily suspended, the tariff could remain in place for an undetermined length of time, be further increased in the future and/or lead consumers to postpone or choose another vehicle brand subject to lower tariffs or no tariffs. Moreover, recently increased import duties on certain components used in our products that are sourced from China may increase our costs and negatively impact our operating results.

Our vehicles and energy storage products make use of lithium-ion battery cells, which have been observed to catch fire or vent smoke and flame, and such events have raised concerns, and future events may lead to additional concerns, about the batteries used in automotive applications.

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 the battery pack 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, which could subject us to lawsuits, product recalls or redesign efforts, all of which would be time consuming and expensive. Also, negative public perceptions regarding the suitability of lithium-ion cells for automotive applications or any future incident involving lithium-ion cells such as a vehicle or other fire, even if such incident does not involve our vehicles or energy storage products, could seriously harm our business.

In addition, we store and recycle a significant number of lithium-ion cells at our facilities and are producing high volumes of cells and battery modules and packs at Gigafactory 1. Any mishandling of battery cells may cause disruption to the operation of our 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. Such damage or injury could lead to adverse publicity and potentially a safety recall. Moreover, any failure of a competitor's electric vehicle or energy storage product may cause indirect adverse publicity for us and our products. Such adverse publicity could negatively affect our brand and harm our business, prospects, financial condition and operating results.

If we fail to effectively grow and manage the residual, financing and credit risks related to our vehicle financing programs, our business may suffer.

We offer financing arrangements for our vehicles in North America, Europe and Asia primarily through various financial institutions. We also currently offer leasing directly through our local subsidiaries for Model S and Model X in the U.S. and Canada and for Model 3 in the U.S. Under a lease held directly by us, 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. The profitability of any 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. For example, we made certain adjustments to our vehicle prices during the first quarter of 2019 to reflect anticipated changes to our cost structure from optimizing our retail strategy, and as a limited accommodation to customers in consideration of the first reduction in the electric vehicle federal tax credit. Such pricing changes may impact the residual values of our vehicles. The leasing program also relies on our ability to secure adequate financing and/or business partners to fund and grow this program, and screen for and manage customer credit risk. We expect the availability of leasing and other financing options will be important for our vehicle customers. If we are unable to adequately fund our leasing program with internal funds, or partners or other external financing sources, and compelling alternative financing programs are not available for our customers, we may be unable to grow our sales. Furthermore, if our leasing business grows substantially, our business may suffer if we cannot effectively manage the greater levels of residual and credit risks resulting from growth. Finally, if we do not successfully monitor and comply with applicable national, state and/or local financial regulations and consumer protection laws governing lease transactions, we may become subject to enforcement actions or penalties, either of which may harm our business.

Moreover, we have provided resale value guarantees to 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, as with residual values for leased vehicles, are subject to similar 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 operating results, profitability and/or liquidity could be negatively impacted.

The unavailability, reduction or elimination of, or unfavorable determinations with respect to, government and economic incentives in the U.S. and abroad supporting the development and adoption of electric vehicles, energy storage products or solar energy could have some impact on demand for our products and services.

We and our customers currently benefit from certain government and economic incentives supporting the development and adoption of electric vehicles. In the U.S. and abroad, such incentives include, among other things, tax credits or rebates that encourage the purchase of electric vehicles. In Norway, for example, the purchase of electric vehicles is not currently subject to import taxes, the 25% value added tax, or the carbon dioxide and weight-based purchase taxes that apply to the purchase of gas-powered vehicles. Notably, the quantum of incentive programs promoting electric vehicles is a tiny fraction of the amount of subsidies that are provided to gas-powered vehicles through the oil and gas industries. Nevertheless, even the limited benefits from such programs could be reduced, eliminated or exhausted. For example, under current regulations, a $7,500 federal tax credit that was available in the U.S. for the purchase of our vehicles is being reduced in phases during, and will sunset at the end of, 2019. We believe the first reduction in this tax credit pulled forward some near-term demand in the U.S. into 2018, and could create similar pull-forwards in 2019 before each further step reduction in the federal tax credit. Moreover, in July 2018, a previously available incentive for purchases of Model 3 in Ontario, Canada was cancelled and Tesla buyers in Germany lost access to electric vehicle incentives for a short period of time beginning late 2017. In April 2017 and January 2016, respectively, previously available incentives in Hong Kong and Denmark that favored the purchase of electric vehicles expired, negatively impacting sales. Effective March 2016, California implemented regulations phasing out a $2,500 cash rebate on qualified electric vehicles for high-income consumers. Such 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 installation costs and cost of capital and encourage customers to buy our products and investors to invest in our solar financing funds. However, these incentives may expire on a particular date when the allocated funding is exhausted, reduced or terminated as renewable energy adoption rates increase, often without warning. For example, the U.S. federal government currently offers a 30% ITC for the installation of solar power facilities and energy storage systems that are charged from a co-sited solar power facility. The ITC is currently scheduled to decline in phases, ultimately to 10% for commercial and utility systems and to 0% for customer-owned residential systems by January 2022. Likewise, in jurisdictions where net energy 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. Several jurisdictions have reduced or eliminated the benefit available under net energy metering, or have proposed to do so. Such reductions in or termination of governmental incentives could adversely impact our results by making our products less competitive for potential 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. Additionally, the enactment of the Tax Cuts and Jobs Act in the U.S. could potentially increase the cost, and decrease the availability, of renewable energy financing, by reducing the value of depreciation benefits associated with, and the overall investor tax capacity needed to monetize, renewable energy projects. Such changes could lower the overall investment willingness and capacity for such projects available in the market.

Moreover, we and our fund investors claim the ITC and certain state incentives in amounts based on the fair market value of our solar and energy storage systems. Although we obtain independent appraisals to support the claimed fair market values, the relevant governmental authorities have audited such values and in certain cases have determined that they 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.

Any failure by us to comply with the terms of our agreement with the Research Foundation for the State University of New York relating to our Gigafactory 2, could result in negative consequences for our business.

We are party to an operating lease arrangement with the Research Foundation for the State University of New York (the "SUNY Foundation"). This agreement provides for the construction of Gigafactory 2 in Buffalo, New York, where we have housed the development and production of solar products and components. Under this agreement, we are obligated to, among other things, directly employ specified minimum numbers of Tesla personnel in the State of New York and spend or incur $5.0 billion in combined capital, operational expenses, costs of goods sold and other costs in the State of New York during the 10-year period following the substantial completion of all construction and related infrastructure, the arrival of manufacturing equipment, and the receipt of certain permits and other specified items at Gigafactory 2. While we expect significant operations at Gigafactory 2 and the surrounding Buffalo area to continue, including our ramp and manufacture of Solar Roof, if we fail in any year over the course of the term of the agreement to meet these obligations, we would be obligated to pay a "program payment" of $41.2 million to the SUNY Foundation in such year. Any inability on our part to comply with the requirements of this agreement may result in the payment of significant amounts to the SUNY Foundation, the termination of our lease at Gigafactory 2, and/or the need to adjust certain of our operations, in particular our production ramp of Solar Roof. Any of the foregoing events could have a material adverse effect on our business, prospects, financial condition and operating results.

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

The loss of the services of any of our key employees could disrupt our operations, delay the development and introduction of our vehicles and services, and negatively impact our business, prospects and operating results. In particular, we are highly dependent on the services of Elon Musk, our Chief Executive Officer, and Jeffrey B. Straubel, our Chief Technology 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 depends upon our ability to attract and retain executive officers and other key technology, sales, marketing, engineering, manufacturing and support personnel, especially to support our high-volume manufacture of vehicles and expansion plans, and any failure or delay in doing so could adversely impact our business, prospects, financial condition and operating results.

Key talent may leave 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 California, Nevada and other regions where we have operations, there is increasing competition for individuals with skillsets needed for our business, including specialized knowledge of electric vehicles, software engineering, manufacturing engineering, and other skills such as electrical and building construction expertise. This competition affects both our ability to retain key employees and hire new ones. Moreover, we have in the past conducted reductions in force in order to optimize our organizational structure and reduce costs, and certain senior personnel have also departed for various reasons. Our continued success depends upon our continued ability to hire new employees in a timely manner, especially to support our expansion plans, and to retain current employees or replace departed senior employees with qualified and experienced individuals, which is typically a time-consuming process. Additionally, we 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. Difficulties in retaining current employees or recruiting new ones could have an adverse effect on our performance and results.

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. Each of our current equity incentive plan and employee stock purchase plan provides for an “evergreen” provision that permits our board of directors to increase on an annual basis, subject to specified limits, the number of equity-based awards that may be granted to, and shares of our common stock that may be purchased by, our personnel thereunder. The currently active plans are currently scheduled to expire in December 2019, and we will need to extend them or adopt new plans in order to continue to compensate our employees following their expiration, which will require the approval of our stockholders. Moreover, the new plans that our board of directors has approved in April 2019 subject to the approval of our stockholders do not contain evergreen provisions, which means that we will have to periodically seek and obtain approval from our stockholders for future increases to the number of awards that may be granted and shares that may be purchased under such plans. If we are unable to obtain the requisite stockholder approvals to approve and adopt these new plans and obtain future increases to the number of awards that may be granted and shares that may be purchased thereunder, and compensate our personnel in accordance with our compensation philosophy, our ability to retain and hire qualified personnel would be negatively impacted.

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

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

We are continuously expanding and improving our information technology systems and use security measures designed to protect our systems against breaches and cyber-attacks. If these efforts are not successful, our business and operations could be disrupted and our operating results and reputation could be harmed.

We are continuously expanding and improving our information technology systems, including implementing new internally developed systems, to assist us in the management of our business. In particular, our volume production of multiple vehicles necessitates continued development, maintenance and improvement of our information technology systems in the U.S., China and other locations abroad, which include product data management, procurement, inventory management, production planning and execution, sales, service and logistics, dealer management, financial, tax and regulatory compliance systems. We also maintain information technology measures designed to protect us against intellectual property theft, data breaches and other cyber-attacks. The implementation, maintenance and improvement of these systems require significant management time, support and cost. Moreover, there are inherent risks associated with developing, improving and expanding our core systems as well as implementing new systems, including the disruption of our data management, procurement, manufacturing execution, finance, supply chain and sales and service processes. These risks may affect our ability to manage our data and inventory, procure parts or supplies or manufacture, sell, deliver and service vehicles, or achieve and maintain compliance with, or realize available benefits under, tax laws and other applicable regulations.

We cannot be sure that these systems or their required functionality will be effectively implemented, maintained or expanded as planned. 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 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 and harm our business.

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. We have designed, implemented and tested security measures intended to prevent unauthorized access to our information technology networks, our products and their systems. However, hackers 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 via our security vulnerability reporting policy, and we aim to remedy any reported and verified vulnerability. Accordingly, we have received reports of potential vulnerabilities in the past and have attempted to remedy them. However, there can be no assurance that vulnerabilities will not be exploited in the future 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 proceedings. 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," could negatively affect our brand and harm our business, prospects, financial condition and operating results. We have been the subject of such reports in the past.

We are subject to various environmental and safety laws and regulations that could impose substantial costs upon us and negatively impact our ability to operate our manufacturing facilities.

As a manufacturing company, including with respect to facilities such as the Tesla Factory, Gigafactory 1, Gigafactory 2 and Gigafactory Shanghai, we are and will be subject to complex environmental, manufacturing, health and safety laws and regulations at numerous jurisdictional levels in the U.S., China and other locations abroad, including laws relating to the use, handling, storage, recycling, disposal and human exposure to hazardous materials. The costs of compliance, including remediating contamination if any is found on our properties and any changes to our operations mandated by new or amended laws, may be significant. We may also face unexpected delays in obtaining permits and approvals required by such laws in connection with our manufacturing facilities, which would hinder our operation of these facilities. Such costs and delays may adversely impact our business prospects and operating results. Furthermore, any violations of these laws may result in substantial fines and penalties, remediation costs, third party damages, or a suspension or cessation of our operations.

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

It is not uncommon for employees at companies with significant manufacturing operations 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. The United Automobile Workers ("UAW") has been engaged in a campaign to organize manufacturing operations at Tesla. As part of that campaign, the UAW has filed with the National Labor Relations Board ("NLRB") a series of unfair labor practice charges against Tesla on which a hearing recently concluded. We cannot predict the timing of the NLRB's decision, and an unfavorable 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 parts suppliers and trucking and freight companies, and work stoppages or strikes organized by such unions could have a material adverse impact on our business, financial condition or operating results. If a work stoppage occurs, it could delay the manufacture and sale of our products and have a material adverse effect on our business, prospects, operating results or financial condition.

Our products and services are subject to substantial regulations, which are evolving, and unfavorable changes or failure by us to comply with these regulations could substantially harm our business and operating results.

Motor vehicles are subject to substantial regulation under international, federal, state and local laws. We incur significant costs in complying with these regulations and may be required to incur additional costs to comply with any changes to such regulations, and any failures to comply could result in significant expenses, delays or fines. We are subject to laws and regulations applicable to the supply, manufacture, import, sale and service of automobiles internationally. For example, in countries outside of the U.S., we are required to meet standards relating to vehicle safety, fuel economy and emissions, among other things, 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.

Additionally, our vehicles are equipped with a suite of driver-assistance features called Autopilot, which help assist drivers with certain tedious and potentially dangerous aspects of road travel, but require drivers to remain engaged. There is a variety of international, federal and state regulations that may apply to self-driving vehicles, which include many existing vehicle standards that were not originally intended to apply to vehicles that may not have a 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 availability, any of which could adversely affect our business.

Moreover, as a manufacturer and installer of solar generation and energy storage systems and a supplier of electricity generated and stored by the solar energy and energy storage systems we install for customers, we are impacted by federal, state and local regulations and policies concerning electricity pricing, the interconnection of electricity generation and storage equipment with the electric grid, and the sale of electricity generated by third-party owned systems. For example, existing or proposed regulations and policies would permit utilities to limit the amount of electricity generated by our customers with their solar energy systems, charge fees and penalties to our customers relating to the purchase of energy other than from the grid, adjust electricity rate designs such that the price of our solar products may not be competitive with that of electricity from the grid, restrict us and our customers from transacting under our PPAs or qualifying for government incentives and benefits that apply to solar power, and limit or eliminate net energy metering. If such regulations and policies remain in effect or are adopted in other jurisdictions,

or if other 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, threaten the economics of our existing contracts and cause us to cease solar and energy storage system sales and operations in the relevant jurisdictions, which could harm our business, prospects, financial condition and results of operations.

Failure to comply with various privacy and consumer protection laws to which we are subject could harm the Company.

Our privacy policy is posted on our website, and any failure by us or our vendor or other business partners to comply with it or with federal, state or international privacy, data protection or security laws or regulations could result in regulatory or litigation-related actions against us, legal liability, fines, damages and other costs. Substantial expenses and operational changes may be required in connection with maintaining compliance with such laws, and in particular certain emerging privacy laws are still subject to a high degree of uncertainty as to their interpretation and application. For example, in May 2018, the General Data Protection Regulation (the "GDPR") began to fully apply to the processing of personal information collected from individuals located in the European Union. The GDPR has created new compliance obligations and has significantly increased fines for noncompliance. Although we take steps to protect the security of our customers' personal information, we may be required to expend significant resources to comply with data breach requirements if 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 could have negative consequences for our business and future prospects, including possible fines, penalties and damages, reduced customer demand for our vehicles and harm to our reputation and brand.

We may choose to or be compelled to undertake product recalls or take other similar actions, which could adversely affect our brand image and financial performance.

Any product recall with respect to our products may result in adverse publicity, damage our brand and adversely affect our business, prospects, operating results and financial condition. For example, certain vehicle recalls that we initiated have resulted from various causes, including a component that could prevent the parking brake from releasing once engaged, a concern with the firmware in the restraints control module in certain right-hand-drive vehicles, industry-wide issues with airbags from a particular supplier, Model X seat components that could cause unintended seat movement during a collision, and concerns of corrosion in Model S power steering assist motor bolts. Furthermore, testing of our products by government regulators or industry groups may require us to initiate product recalls or may result in negative public perceptions about the safety of our products. In the future, we may at various times, voluntarily or involuntarily, initiate a recall if any of our products or our electric vehicle powertrain components that we have provided to other vehicle OEMs, including any systems or parts sourced from our suppliers, prove to be defective or noncompliant with applicable laws and regulations, such as 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 involve significant expense and could adversely affect our brand image in our target markets, as well as our business, prospects, financial condition and results of operations.

Our current and future warranty reserves may be insufficient to cover future warranty claims which could adversely affect our financial performance.

Subject to separate limited warranties for the supplemental restraint system, battery and drive unit, we provide four-year or 50,000-mile limited warranties for the purchasers of new Model 3, Model S and Model X vehicles and either a four-year or 50,000-mile limited warranty or a two-year or 100,000-mile maximum odometer limited warranty for the purchasers of used Model S or Model X vehicles certified and sold by us. The limited warranty for the battery and drive unit for new Model S and Model X vehicles covers the drive unit for eight years, as well as the battery for a period of eight years (or for certain older vehicles, 125,000 miles if reached sooner than eight years), although the battery's charging capacity is not covered under any of our warranties or Extended Service plans; the limited warranty for used Model S and Model X vehicles does not extend or otherwise alter the terms of the original battery and drive unit limited warranty for such used vehicles specified in their original New Vehicle Limited Warranty. For the battery and drive unit on our current new Model 3 vehicles, we offer an eight-year or 100,000-mile limited warranty for our Standard Range, Standard Range Plus or mid-range battery and an eight-year or 120,000-mile limited warranty for our

long-range battery, with minimum 70% retention of battery capacity over the warranty period. In addition, customers of new Model S and Model X vehicles have the opportunity to purchase an Extended Service plan for the period after the end of the limited warranty for their new vehicles to cover additional services for up to an additional four years or 50,000 miles.

For energy storage products, we provide limited warranties against defects and to guarantee minimum energy retention levels. For example, we currently guarantee that each Powerwall 2 product will maintain at least 70% or 80% (depending on the region of installation) of its stated energy capacity after 10 years, and that each Powerpack 2 product will retain specified minimum energy capacities in each of its first 15 years of use. For our Solar Roof, we currently offer a warranty on the glass tiles for the lifetime of a customer’s home and a separate warranty for the energy generation capability of the solar tiles. We also offer extended warranties, availability guarantees and capacity guarantees for periods of up to 20 years at an additional cost at the time of purchase, as well as workmanship warranties to customers who elect to have us install their systems.

Finally, customers who lease solar energy system leases or buy energy from us under PPAs are covered by warranties equal to the length of the agreement term, which is typically 20 years. Systems purchased for cash are covered by a workmanship warranty of up to 20 years. In addition, we pass through to our customers the inverter and panel manufacturers' warranties, which generally range from 10 to 25 years. Finally, we provide a performance guarantee with our leased solar energy systems that compensates a customer on an annual basis if their system does not meet the electricity production guarantees set forth in their lease. Under these performance guarantees, we bear the risk of production shortfalls resulting from an inverter or panel failure. These risks are exacerbated in the event the panel or inverter manufacturers cease operations or fail to honor their warranties.

If our warranty reserves are inadequate to cover future warranty claims on our products, our business, prospects, financial condition and operating results could be materially and adversely affected. Warranty reserves include our management's best estimate of the projected costs to repair or to replace items under warranty. These estimates 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 and Solar Roof that we have recently introduced 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 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, and we cannot be certain that our insurance coverage will be sufficient to cover all future losses or claims against us. A loss that is uninsured or which exceeds policy limits may require us to pay substantial amounts, which could adversely affect our financial condition and operating results.

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 such as Gigafactory Shanghai 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 quarterly financial results. If any of this occurs, the trading price of our stock could fall substantially, either suddenly or over time.

Servicing our indebtedness requires a significant amount of cash, and there is no guarantee that we will have sufficient cash flow from our business to pay our substantial indebtedness.

As of March 31, 2019, we and our subsidiaries had outstanding $10.33 billion in aggregate principal amount of indebtedness (see Note 10, Long-Term Debt Obligations, to the consolidated financial statements included elsewhere in this Quarterly Report on Form 10-Q). Our substantial 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.

Pursuant to their terms, holders of our 1.25% Convertible Senior Notes due 2021 and 2.375% Convertible Senior Notes due 2022 (together, the "Tesla Convertible Notes") may convert their respective Tesla Convertible Notes at their option prior to the scheduled maturities of the respective Tesla Convertible Notes under certain circumstances. Upon conversion of the applicable Tesla Convertible Notes, we will be obligated to deliver cash and/or shares in respect of the principal amounts thereof and the conversion value in excess of such principal amounts on such Tesla Convertible Notes. Moreover, our subsidiary's 1.625% Convertible Senior Notes due 2019 and Zero-Coupon Convertible Senior Notes due 2020 (together, the "Subsidiary Convertible Notes") are convertible into shares of our common stock at conversion prices ranging from $300.00 to $759.36 per share. Finally, holders of the Tesla Convertible Notes and the Subsidiary Convertible Notes will have the right to require us to repurchase their notes upon the occurrence of a fundamental change at a purchase price equal to 100% of the principal amount of the notes, plus accrued and unpaid interest, if any, to, but not including, the fundamental change purchase date.

Our ability to make scheduled payments of the principal and interest on our indebtedness when due or to make payments upon conversion or repurchase demands with respect to our convertible 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 any of these activities or engage in these activities on desirable terms or at all, which could result in a default on our existing or future indebtedness and have a material adverse effect on our business, results of operations and financial condition.

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 secured 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.

We may need or want to raise additional funds and these funds may not be available to us when we need them. If we cannot raise additional funds when we need or want them, our operations and prospects could be negatively affected.

The design, manufacture, sale, installation and/or servicing of automobiles, energy storage products and solar products is a capital intensive business, and the specific timing of cash inflows and outflows may fluctuate substantially from period to period. Until we are consistently generating positive free cash flows, 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 vehicles, energy storage products and/or solar 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 need sufficient capital to fund our ongoing operations, ramp vehicle production, continue research and development projects for new products, continue to develop our main projects including Gigafactory Shanghai, Model Y and Tesla Semi, as well as further expand our Supercharger and vehicle service and repair networks. 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.

Additionally, we use capital from third-party investors to enable our customers' access to our solar energy systems with little or no upfront cost. The availability of this financing depends upon many factors, including the confidence of the investors in the solar energy industry, the quality and mix of our customer contracts, any regulatory changes impacting the economics of our existing customer contracts, changes in law (including tax law), risks or government incentives associated with these financings, and our ability to compete with other renewable energy companies for the

limited number of potential investors. Moreover, while interest rates remain at low levels, they have risen in recent periods. If the rate of return required by investors rises as a result of a rise in interest rates, it will reduce the present value of the customer payment streams underlying, and therefore the total value of, our financing structures, increasing our cost of capital. If we are unable to establish new financing funds on favorable terms for third-party ownership arrangements, we may be unable to finance the installation of our solar energy systems for our lease or PPA customers' systems, or our cost of capital could increase and our liquidity may be negatively impacted, which would have an adverse effect on our business, financial condition and results of operations.

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 13, Commitments and Contingencies, to the consolidated financial statements included elsewhere in this Quarterly Report on Form 10-Q. Aside from the settlement with the SEC discussed below relating to Elon Musk's statement that he was considering taking Tesla private, to our knowledge no government agency in any ongoing investigation has concluded that any wrongdoing occurred. However, we cannot predict the outcome or impact of any 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 DOJ, 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 the Board, 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, a proposed amendment to the settlement to modify certain of the previously-agreed disclosure procedures to clarify the application of such procedures was submitted to the Court for approval. All other terms of the prior settlement are proposed by the parties to be 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.

If we update or discontinue the use of our manufacturing equipment more quickly than expected, we may have to shorten the useful lives of any equipment to be retired as a result of any such update, and the resulting acceleration in our depreciation could negatively affect our financial results.

We have invested and expect to continue to invest significantly in what we believe is state of the art tooling, machinery and other manufacturing equipment for our various product lines, and we depreciate the cost of such equipment over their expected useful lives. However, manufacturing technology may evolve rapidly, and we may decide to update our manufacturing process with cutting-edge equipment more quickly than expected. Moreover, we are continually implementing learnings as our engineering and manufacturing expertise and efficiency increase, which may result in our ability to manufacture our products using less of our currently installed equipment. Alternatively, as we ramp production of Model 3 to higher levels, our learnings may cause us to 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 could be negatively impacted.

We are exposed to fluctuations in currency exchange rates, which could negatively affect our financial results.

Our revenues and costs denominated in foreign currencies are not completely matched. As we have increased vehicle deliveries in markets outside of the U.S., we have much higher revenues than costs denominated in other currencies such as the euro, Canadian dollar, Chinese yu