UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

(Mark One)

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2019

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from __________ to __________

Commission File Number: 001-34756

Tesla, Inc.

(Exact name of registrant as specified in its charter)

Delaware **(State or other jurisdiction of incorporation or organization)**	**91-2197729** **(I.R.S. Employer Identification No.)**
3500 Deer Creek Road **Palo Alto, California** **(Address of principal executive offices)**	**94304** **(Zip Code)**

(650) 681-5000

(Registrant's telephone number, including area code)

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

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

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

None

Indicate by check mark whether the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☒ No ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Act. Yes ☐ No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 ("Exchange Act") during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act:

Large accelerated filer	☒	Accelerated filer	☐
Non-accelerated filer	☐	Smaller reporting company	☐
Emerging growth company	☐		

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

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

The aggregate market value of voting stock held by non-affiliates of the registrant, as of June 30, 2019, the last day of the registrant's most recently completed second fiscal quarter, was $31.54 billion (based on the closing price for shares of the registrant's Common Stock as reported by the NASDAQ Global Select Market on June 30, 2019). Shares of Common Stock held by each executive officer, director, and holder of 5% or more of the outstanding Common Stock have been excluded in that such persons may be deemed to be affiliates. This determination of affiliate status is not necessarily a conclusive determination for other purposes.

As of February 7, 2020, there were 181,341,586 shares of the registrant's Common Stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Proxy Statement for the 2020 Annual Meeting of Stockholders are incorporated herein by reference in Part III of this Annual Report on Form 10-K to the extent stated herein. Such proxy statement will be filed with the Securities and Exchange Commission within 120 days of the registrant's fiscal year ended December 31, 2019.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

Index to Consolidated Financial Statements

Report of Independent Registered Public Accounting Firm

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

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Tesla, Inc. and its subsidiaries (the "Company") as of December 31, 2019 and 2018, and the related consolidated statements of operations, of comprehensive loss, of redeemable noncontrolling interests and equity and of cash flows for each of the three years in the period ended December 31, 2019, including the related notes (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in ~~*Internal Control - Integrated Framework*~~ (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on criteria established in ~~*Internal Control - Integrated Framework*~~ (2013) issued by the COSO.

Changes in Accounting Principles

As discussed in Note 2 to the consolidated financial statements, the Company changed the manner in which it accounts for leases in 2019 and the manner in which it accounts for revenue from contracts with customers in 2018.

Basis for Opinions

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

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

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Critical Audit Matters

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

Automotive Sales To Customers With a Resale Value Guarantee or Buyback Option

As described in Note 2 to the consolidated financial statements, the sales return reserve related to resale value guarantees or buyback options was $639 million as of December 31, 2019, of which $93 million was short-term. The Company offers some customers resale value guarantees or buyback options. Under these programs, the Company receives full payment for the vehicle sales price at the time of delivery and the customer has the option of selling their vehicle back to the Company during the guarantee period for a pre-determined resale value. In circumstances where management does not believe the customer has a significant economic incentive to exercise the resale value guarantee or buyback option provided to them, the Company recognizes revenue when control transfers upon delivery to a customer as a sale with a right of return. In circumstances where management believes the customer has a significant economic incentive to exercise the resale value guarantee or buyback option, the Company recognizes the transaction as an operating lease. Management's determination of whether there is a significant economic incentive includes comparing and considering a vehicle's estimated market value at the time the option is exercisable with the guaranteed resale value. Sales return reserves are estimated based on historical experience plus estimates of expected future market values. On a quarterly basis, management reassesses the estimated future market values of vehicles under these programs, taking into account price adjustments on new vehicles and other changes in market value subsequent to the initial sale to determine the need for changes to the reserve.

The principal considerations for our determination that performing procedures relating to automotive sales to customers with a resale value guarantee or buyback option is a critical audit matter are there was significant judgment by management in determining the sales return reserve when customers do not have a significant economic incentive to exercise their option. This in turn led to high degree of auditor judgment, subjectivity, and effort in performing procedures and evaluating evidence in the sales return reserve when customers do not have a significant economic incentive.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to automotive revenue recognition for sales to customers with a resale value guarantee or buyback option as well as the related sales return reserve, including controls over management's estimate of expected future market values and historical experience. These procedures also included, among others, testing management's process for determining whether customers have a significant economic incentive to exercise their put rights under the resale value guarantee and buyback option programs and, if not, the related sales return reserve. This included evaluating the appropriateness of the model applied and the reasonableness of significant assumptions, including historical experience and the estimated expected future market values used in the comparison to guaranteed resale amounts. Evaluating assumptions related to historical experience and estimated expected future market values involved evaluating whether the assumptions used were reasonable considering current and past performance and consistency with evidence obtained in other areas of the audit. Procedures were performed to evaluate the reliability, completeness and relevance of management's data used in the development of the historical experience assumption.

Automotive Warranty Reserve

As described in Note 2 to the consolidated financial statements, total accrued warranty, which primarily relates to the automotive segment, was $1,089 million as of December 31, 2019. The Company provides a manufacturer's warranty on all new and used Tesla vehicles. As described in Note 2, a warranty reserve is accrued for these products sold, which includes management's best estimate of the projected costs to repair or replace items under warranty, including recalls when identified. These estimates are based on actual claims incurred to date and an estimate of the nature, frequency and costs of future claims.

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

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

/s/PricewaterhouseCoopers LLP

San Jose, California
February 13, 2020

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

Tesla, Inc.

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

	December 31, 2019	December 31, 2018
Assets		
Current assets		
Cash and cash equivalents	$ 6,268	$ 3,686
Restricted cash	246	193
Accounts receivable, net	1,324	949
Inventory	3,552	3,113
Prepaid expenses and other current assets	713	366
Total current assets	12,103	8,307
Operating lease vehicles, net	2,447	2,090
Solar energy systems, net	6,138	6,271
Property, plant and equipment, net	10,396	11,330
Operating lease right-of-use assets	1,218	—
Intangible assets, net	339	282
Goodwill	198	68
MyPower customer notes receivable, net of current portion	393	422
Restricted cash, net of current portion	269	398
Other assets	808	572
Total assets	$ 34,309	$ 29,740
Liabilities		
Current liabilities		
Accounts payable	$ 3,771	$ 3,405
Accrued liabilities and other	2,905	2,094
Deferred revenue	1,163	630
Resale value guarantees	317	503
Customer deposits	726	793
Current portion of debt and finance leases	1,785	2,568
Total current liabilities	10,667	9,993
Debt and finance leases, net of current portion	11,634	9,404
Deferred revenue, net of current portion	1,207	991
Resale value guarantees, net of current portion	36	329
Other long-term liabilities	2,655	2,710
Total liabilities	26,199	23,427
Commitments and contingencies (Note 16)		
Redeemable noncontrolling interests in subsidiaries	643	556
Equity		
Stockholders' equity		
Preferred stock; $0.001 par value; 100 shares authorized; no shares issued and outstanding	—	—
Common stock; $0.001 par value; 2,000 shares authorized; 181 and 173 shares issued and outstanding as of December 31, 2019 and 2018, respectively	0	0
Additional paid-in capital	12,737	10,249
Accumulated other comprehensive loss	(36)	(8)
Accumulated deficit	(6,083)	(5,318)
Total stockholders' equity	6,618	4,923
Noncontrolling interests in subsidiaries	849	834
Total liabilities and equity	$ 34,309	$ 29,740

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

Tesla, Inc.

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

	Year Ended December 31,		
	2019	2018	2017
Revenues			
Automotive sales	$ 19,952	$ 17,632	$ 8,535
Automotive leasing	869	883	1,107
Total automotive revenues	20,821	18,515	9,642
Energy generation and storage	1,531	1,555	1,116
Services and other	2,226	1,391	1,001
Total revenues	24,578	21,461	11,759
Cost of revenues			
Automotive sales	15,939	13,686	6,725
Automotive leasing	459	488	708
Total automotive cost of revenues	16,398	14,174	7,433
Energy generation and storage	1,341	1,365	874
Services and other	2,770	1,880	1,229
Total cost of revenues	20,509	17,419	9,536
Gross profit	4,069	4,042	2,223
Operating expenses			
Research and development	1,343	1,460	1,378
Selling, general and administrative	2,646	2,835	2,477
Restructuring and other	149	135	—
Total operating expenses	4,138	4,430	3,855
Loss from operations	(69)	(388)	(1,632)
Interest income	44	24	19
Interest expense	(685)	(663)	(471)
Other income (expense), net	45	22	(125)
Loss before income taxes	(665)	(1,005)	(2,209)
Provision for income taxes	110	58	32
Net loss	(775)	(1,063)	(2,241)
Net income (loss) attributable to noncontrolling interests and redeemable noncontrolling interests in subsidiaries	87	(87)	(279)
Net loss attributable to common stockholders	$ (862)	$ (976)	$ (1,962)
Net loss per share of common stock attributable to common stockholders			
Basic	(4.92)	$ (5.72)	$ (11.83)
Diluted	(4.92)	$ (5.72)	$ (11.83)
Weighted average shares used in computing net loss per share of common stock			
Basic	177	171	166
Diluted	177	171	166

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

Tesla, Inc.

Consolidated Statements of Comprehensive Loss
(in millions)

	Year Ended December 31,		
	2019	2018	2017
Net loss	$ (775)	$ (1,063)	$ (2,241)
Other comprehensive loss:			
Reclassification adjustment for net gains on derivatives into net loss	—	—	(6)
Foreign currency translation adjustment	(28)	(42)	63
Comprehensive loss	(803)	(1,105)	(2,184)
Less: Comprehensive income (loss) attributable to noncontrolling interests and redeemable noncontrolling interests in subsidiaries	87	(87)	(279)
Comprehensive loss attributable to common stockholders	$ (890)	$ (1,018)	$ (1,905)

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

Tesla, Inc.

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

	Redeemable Noncontrolling Interests	Common Stock Shares	Common Stock Amount	Additional Paid-In Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Total Stockholders' Equity	Noncontrolling Interests in Subsidiaries	Total Equity
Balance as of December 31, 2016	$ 367	162	$ 0	$ 7,774	$ (2,997)	$ (24)	$ 4,753	$ 785	$ 5,538
Adjustment of prior periods due to adoption of Accounting Standards Update No. 2016-09	—	—	—	15	(15)	—	—	—	—
Conversion feature of Convertible Senior Notes due in 2022	—	—	—	146	—	—	146	—	146
Purchases of convertible note hedges	—	—	—	(204)	—	—	(204)	—	(204)
Sales of warrants	—	—	—	53	—	—	53	—	53
Exercises of conversion feature of convertible senior notes	—	1	0	230	—	—	230	—	230
Issuance of common stock for equity incentive awards and acquisitions, net of transaction costs	—	4	0	269	—	—	269	—	269
Issuance of common stock in March 2017 public offering at $262.00 per share, net of issuance costs of $3	—	2	0	400	—	—	400	—	400
Stock-based compensation	—	—	—	485	—	—	485	—	485
Contributions from noncontrolling interests	193	—	—	—	—	—	—	597	597
Distributions to noncontrolling interests	(101)	—	—	—		—	—	(164)	(164)
Other	(3)	—	—	10	—	—	10	—	10
Net loss	(58)	—	—	—	(1,962)	—	(1,962)	(221)	(2,183)
Other comprehensive income	—	—	—	—	—	57	57	—	57
Balance as of December 31, 2017	$ 398	169	$ 0	$ 9,178	$ (4,974)	$ 33	$ 4,237	$ 997	$ 5,234
Adjustments for prior periods from adopting ASC 606	8	—	—	—	623	—	623	(89)	534
Adjustments for prior periods from adopting Accounting Standards Update No. 2017-05	—	—	—	—	9	—	9	—	9
Issuance of common stock for equity incentive awards	—	4	0	296	—	—	296	—	296
Stock-based compensation	—	—	—	775	—	—	775	—	775
Contributions from noncontrolling interests	276	—	—	—	—	—	—	161	161
Distributions to noncontrolling interests	(61)	—	—	—	—	—	—	(210)	(210)
Other	(3)	—	—	—	—	—	—	—	—
Net loss	(62)	—	—	—	(976)	—	(976)	(25)	(1,001)
Other comprehensive loss	—	—	—	—	—	(41)	(41)	—	(41)
Balance as of December 31, 2018	$ 556	173	$ 0	$ 10,249	$ (5,318)	$ (8)	$ 4,923	$ 834	$ 5,757
Adjustments for prior periods from adopting ASC 842	—	—	—	—	97	—	97	—	97
Conversion feature of Convertible Senior Notes due in 2024	—	—	—	491	—	—	491	—	491
Purchase of convertible note hedges	—	—	—	(476)	—	—	(476)	—	(476)
Sales of warrants	—	—	—	174	—	—	174	—	174
Issuance of common stock for equity incentive awards and acquisitions, net of transaction costs	—	4	0	482	—	—	482	—	482
Issuance of common stock in May 2019 public offering at $243.00 per share, net of issuance costs of $15	—	4	0	848	—	—	848	—	848
Stock-based compensation	—	—	—	973	—	—	973	—	973
Contributions from noncontrolling interests	105	—	—	—	—	—	—	174	174
Distributions to noncontrolling interests	(65)	—	—	—	—	—	—	(198)	(198)
Other	(1)	—	—	(4)	—	—	(4)	—	(4)
Net income (loss)	48	—	—	—	(862)	—	(862)	39	(823)
Other comprehensive loss	—	—	—	—	—	(28)	(28)	—	(28)
Balance as of December 31, 2019	$ 643	181	$ 0	$ 12,737	$ (6,083)	$ (36)	$ 6,618	$ 849	$ 7,467

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

Tesla, Inc.

Consolidated Statements of Cash Flows
(in millions)

	Year Ended December 31,		
	2019	2018	2017
Cash Flows from Operating Activities			
Net loss	$ (775)	$ (1,063)	$ (2,241)
Adjustments to reconcile net loss to net cash provided by (used in) operating activities:			
Depreciation, amortization and impairment	2,154	1,901	1,636
Stock-based compensation	898	749	467
Amortization of debt discounts and issuance costs	188	159	91
Inventory and purchase commitments write-downs	193	85	132
Loss on disposals of fixed assets	146	162	106
Foreign currency transaction (gains) loss	(48)	(2)	52
Loss related to SolarCity acquisition	—	—	58
Non-cash interest and other operating activities	186	49	135
Operating cash flow related to repayment of discounted convertible notes	(188)	—	—
Changes in operating assets and liabilities, net of effect of business combinations:			
Accounts receivable	(367)	(497)	(25)
Inventory	(429)	(1,023)	(179)
Operating lease vehicles	(764)	(215)	(1,523)
Prepaid expenses and other current assets	(288)	(82)	(72)
Other non-current assets	115	(207)	(15)
Accounts payable and accrued liabilities	682	1,723	388
Deferred revenue	801	406	469
Customer deposits	(58)	(96)	170
Resale value guarantee	(150)	(111)	209
Other long-term liabilities	109	160	81
Net cash provided by (used in) operating activities	2,405	2,098	(61)
Cash Flows from Investing Activities			
Purchases of property and equipment excluding finance leases, net of sales	(1,327)	(2,101)	(3,415)
Purchases of solar energy systems	(105)	(218)	(666)
Purchase of intangible assets	(5)	—	—
Receipt of government grants	46	—	—
Business combinations, net of cash acquired	(45)	(18)	(115)
Net cash used in investing activities	(1,436)	(2,337)	(4,196)
Cash Flows from Financing Activities			
Proceeds from issuances of common stock in public offerings, net of underwriting discounts	848	—	400
Proceeds from issuances of convertible and other debt	10,669	6,176	7,138
Repayments of convertible and other debt	(9,161)	(5,247)	(3,996)
Repayments of borrowings issued to related parties	—	(100)	(165)
Collateralized lease repayments	(389)	(559)	511
Proceeds from exercises of stock options and other stock issuances	263	296	259
Principal payments on finance leases	(321)	(181)	(103)
Common stock and debt issuance costs	(37)	(15)	(63)
Purchase of convertible note hedges	(476)	—	(204)
Proceeds from settlement of convertible note hedges	—	—	287
Proceeds from issuance of warrants	174	—	53
Payments for settlements of warrants	—	—	(230)
Proceeds from investments by noncontrolling interests in subsidiaries	279	437	790
Distributions paid to noncontrolling interests in subsidiaries	(311)	(227)	(262)
Payments for buy-outs of noncontrolling interests in subsidiaries	(9)	(6)	—
Net cash provided by financing activities	1,529	574	4,415
Effect of exchange rate changes on cash and cash equivalents and restricted cash	8	(23)	40
Net increase in cash and cash equivalents and restricted cash	2,506	312	198
Cash and cash equivalents and restricted cash, beginning of period	4,277	3,965	3,767
Cash and cash equivalents and restricted cash, end of period	$ 6,783	$ 4,277	$ 3,965
Supplemental Non-Cash Investing and Financing Activities			
Equity issued in connection with business combination	$ 207	$ —	$ —
Acquisitions of property and equipment included in liabilities	$ 562	$ 249	$ 914
Estimated fair value of facilities under build-to-suit leases	$ —	$ 94	$ 313
Supplemental Disclosures			
Cash paid during the period for interest, net of amounts capitalized	$ 455	$ 381	$ 183
Cash paid during the period for taxes, net of refunds	$ 54	$ 35	$ 66

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

Note 1 – Overview

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

Note 2 – Summary of Significant Accounting Policies

Principles of Consolidation

The accompanying consolidated financial statements have been prepared in conformity with U.S. generally accepted accounting principles (“GAAP”) and reflect our accounts and operations and those of our subsidiaries in which we have a controlling financial interest. In accordance with the provisions of Accounting Standards Codification (“ASC”) 810, *Consolidation*, we consolidate any variable interest entity (“VIE”) of which we are the primary beneficiary. We form VIEs with financing fund investors in the ordinary course of business in order to facilitate the funding and monetization of certain attributes associated with solar energy systems and leases under our direct vehicle leasing programs. The typical condition for a controlling financial interest ownership is holding a majority of the voting interests of an entity; however, a controlling financial interest may also exist in entities, such as VIEs, through arrangements that do not involve controlling voting interests. ASC 810 requires a variable interest holder to consolidate a VIE if that party has the power to direct the activities of the VIE that most significantly impact the VIE’s economic performance and the obligation to absorb losses of the VIE that could potentially be significant to the VIE or the right to receive benefits from the VIE that could potentially be significant to the VIE. We do not consolidate a VIE in which we have a majority ownership interest when we are not considered the primary beneficiary. We have determined that we are the primary beneficiary of all the VIEs (see Note 17, *Variable Interest Entity Arrangements*). We evaluate our relationships with all the VIEs on an ongoing basis to ensure that we continue to be the primary beneficiary. All intercompany transactions and balances have been eliminated upon consolidation.

Use of Estimates

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities and disclosures in the accompanying notes. Estimates are used for, but not limited to, determining the transaction price of products and services in arrangements with multiple performance obligations and determining the amortization period of these obligations, significant economic incentive for residual value guarantee arrangements, sales return reserves, the collectability of accounts receivable, inventory valuation, fair value of long-lived assets, goodwill, fair value of financial instruments, residual value of operating lease vehicles, depreciable lives of property and equipment and solar energy systems, fair value and residual value of solar energy systems subject to leases, warranty liabilities, income taxes, contingencies, determining lease pass-through financing obligations, the valuation of build-to-suit lease assets, fair value of interest rate swaps and inputs used to value stock-based compensation. In addition, estimates and assumptions are used for the accounting for business combinations, including the fair values and useful lives of acquired assets, assumed liabilities and noncontrolling interests. Management bases its estimates on historical experience and on various other assumptions believed to be reasonable, the results of which form the basis for making judgments about the carrying values of assets and liabilities. Actual results could differ from those estimates.

Revenue Recognition

Adoption of new accounting standards

ASU 2014-09, *Revenue - Revenue from Contracts with Customer*s. On January 1, 2018, we adopted the new accounting standard ASC 606, Revenue from Contracts with Customers and all the related amendments (“new revenue standard”) using the modified retrospective method. As a policy election, the new revenue standard was applied only to contracts that were not substantially completed as of the date of adoption. We recognized the cumulative effect of initially applying the new revenue standard as an adjustment to the January 1, 2018 opening balance of accumulated deficit. The prior period consolidated financial statements have not been retrospectively adjusted and continue to be reported under the accounting standards in effect for those periods.

A majority of our automotive sales revenue is recognized when control transfers upon delivery to customers. For certain vehicle sales where revenue was previously deferred as an in-substance operating lease, such as certain vehicle sales to customers or leasing partners with a resale value guarantee, we recognize revenue when the vehicles are delivered as a sale with a right of return. As a result, the corresponding operating lease asset, deferred revenue, and resale value guarantee balances as of December 31, 2017, were reclassified to accumulated deficit as part of our adoption entry. Furthermore, the warranty liability related to such vehicles has been accrued as a result of the change from in-substance operating leases to vehicle sales. Prepayments on contracts that can be cancelled without significant penalties, such as vehicle maintenance plans, have been reclassified from deferred revenue to customer deposits. Refer to the *Automotive Sales Revenue* and *Automotive Leasing Revenue* sections below for further discussion of the impact on various categories of vehicle sales.

Automotive Segment

Automotive Sales Revenue

Automotive Sales without Resale Value Guarantee

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

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

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

Automotive Sales with Resale Value Guarantee or a Buyback Option

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

With the exception of two programs which are discussed within the *Automotive Leasing* section, we recognize revenue when control transfers upon delivery to customers in accordance with the new revenue standard as a sale with a right of return as we do not believe the customer has a significant economic incentive to exercise the resale value guarantee provided to them. The process to determine whether there is a significant economic incentive includes a comparison of a vehicle's estimated market value at the time the option is exercisable with the guaranteed resale value to determine the customer's economic incentive to exercise. The performance obligations and the pattern of recognizing automotive sales with resale value guarantees are consistent with automotive sales without resale value guarantees with the exception of our estimate for sales return reserve. Sales return reserves for automotive sales with resale value guarantees are estimated based on historical experience plus consideration for expected future market values. On a quarterly basis, we assess the estimated market values of vehicles under our buyback options program to determine whether there have been changes to the likelihood of future product returns. As we accumulate more data related to the buyback values of our vehicles or as market conditions change, there may be material changes to their estimated values. Due to price adjustments we made to our vehicle offerings during 2019, we estimated that there is a greater likelihood that customers will exercise their buyback options that were provided prior to such adjustments. As a result, along with the estimated variable consideration related to normal future product returns for vehicles sold under the buyback options program, we adjusted our sales return reserve on vehicles previously sold under our buyback options program resulting in a reduction of automotive sales revenues of $555 million for the year ended December 31, 2019. If customers elect to exercise the buyback option, we expect to be able to subsequently resell the returned vehicles, which resulted in a corresponding reduction in cost of automotive sales of $451 million for the year ended December 31, 2019. The net impact was $104 million reduction in gross profit for the year ended December 31, 2019. The total sales return reserve on vehicles previously sold under our buyback options program was $639 million as of December 31, 2019, of which $93 million was short term. The two programs that are still being recorded as operating leases are discussed in further detail below in *Vehicle Sales to Leasing Partners with a Resale Value Guarantee and a Buyback Option* and *Vehicle Sales to Customers with a Resale Value Guarantee where Exercise is Probable.*

Prior to the adoption of the new revenue standard, all transactions with resale value guarantees were recorded as operating leases. The amount of sale proceeds equal to the resale value guarantee was deferred until the guarantee expired or was exercised. For certain transactions that were considered interest bearing collateralized borrowings as required under ASC 840, *Leases* prior to January 1, 2019, we also accrued interest expense based on our borrowing rate. The remaining sale proceeds were deferred and recognized on a straight-line basis over the stated guarantee period to automotive leasing revenue. The guarantee period expired at the earlier of the end of the guarantee period or the pay-off of the initial loan. We capitalized the cost of these vehicles on the consolidated balance sheet as operating lease vehicles, net, and depreciated their value, less estimated residual value, to cost of automotive leasing revenue over the same period.

In cases where our counterparty retained ownership of the vehicle at the end of the guarantee period, the resale value guarantee liability and any remaining deferred revenue balances related to the vehicle were settled to automotive leasing revenue, and the net book value of the leased vehicle was expensed to cost of automotive leasing revenue. If our counterparty returned the vehicle to us during the guarantee period, we purchased the vehicle from our counterparty in an amount equal to the resale value guarantee and settled any remaining deferred balances to automotive leasing revenue, and we reclassified the net book value of the vehicle on the consolidated balance sheet to used vehicle inventory.

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

	Year ended December 31,	
	2019	**2018**
Deferred revenue on automotive sales with and without resale value guarantee— beginning of period	$ 883	$ 476
Additions	880	532
Net changes in liability for pre-existing contracts	9	(13)
Revenue recognized	(300)	(112)
Deferred revenue on automotive sales with and without resale value guarantee— end of period	$ 1,472	$ 883

Deferred revenue is equivalent to the total transaction price allocated to the performance obligations that are unsatisfied, or partially unsatisfied, as of December 31, 2019. From the deferred revenue balance as of December 31, 2018, revenue recognized during the year ended December 31, 2019 was $220 million. From the deferred revenue balance as of January 1, 2018, revenue recognized during the year ended December 31, 2018 was $81 million. Of the total deferred revenue on automotive sales with and without resale value guarantees as of December 31, 2019, we expect to recognize $751 million of revenue in the next 12 months. The remaining balance will be recognized over the performance period as discussed above in *Automotive Sales without Resale Value Guarantee*.

Automotive Regulatory Credits

In connection with the production and delivery of our zero emission vehicles in global markets, we have earned and will continue to earn various tradable automotive regulatory credits. We have sold these credits, and will continue to sell future credits, to automotive companies and other regulated entities who can use the credits to comply with emission standards and other regulatory requirements. For example, under California's Zero Emission Vehicle Regulation and those of states that have adopted California's standard, vehicle manufacturers are required to earn or purchase credits, referred to as ZEV credits, for compliance with their annual regulatory requirements. These laws provide that automakers may bank or sell to other regulated parties their excess credits if they earn more credits than the minimum quantity required by those laws. We also earn other types of saleable regulatory credits in the United States and abroad, including greenhouse gas, fuel economy and clean fuels credits. Payments for regulatory credits are typically received at the point control transfers to the customer, or in accordance with payment terms customary to the business.

We recognize revenue on the sale of automotive regulatory credits at the time control of the regulatory credits is transferred to the purchasing party as automotive revenue in the consolidated statements of operations. Revenue from the sale of automotive regulatory credits totaled $594 million, $419 million and $360 million for the years ended December 31, 2019, 2018 and 2017, respectively. Deferred revenue related to sales of automotive regulatory credits was $140 million and $0 as of December 31, 2019 and 2018, respectively. We expect to recognize the deferred revenue as of December 31, 2019 in the next 12 months.

Automotive Leasing Revenue

Automotive leasing revenue includes revenue recognized under lease accounting guidance for our direct leasing programs as well as the two programs with resale value guarantees which continue to qualify for operating lease treatment. Prior to the adoption of the new revenue standard, all programs with resale value guarantees were accounted for as operating leases.

Direct Vehicle Leasing Program

We have outstanding leases under our direct vehicle leasing programs in the U.S., Canada and in certain countries in Europe. As of December 31, 2019, the direct vehicle leasing program is offered for all new Model S, Model X and Model 3 vehicles in the U.S. and for new Model S and Model X vehicles in Canada. Qualifying customers are permitted to lease a vehicle directly from Tesla for up to 48 months. At the end of the lease term, customers are required to return the vehicles to us or for Model S and Model X leases, may opt to purchase the vehicles for a pre-determined residual value. We account for these leasing transactions as operating leases. We record leasing revenues to automotive leasing revenue on a straight-line basis over the contractual term, and we record the depreciation of these vehicles to cost of automotive leasing revenue. For the years ended December 31, 2019, 2018 and 2017 , we recognized $532 million, $393 million and $221 million of direct vehicle leasing revenue, respectively . As of December 31, 2019 and 2018, we had deferred $218 million and $110 million, respectively, of lease-related upfront payments, which will be recognized on a straight-line basis over the contractual terms of the individual leases.

We capitalize shipping costs and initial direct costs such as the incremental cost of referral fees and sales commissions from the origination of automotive lease agreements as an element of operating lease vehicles, net, and subsequently amortize these costs over the term of the related lease agreement. Our policy is to exclude taxes collected from a customer from the transaction price of automotive contracts. Total capitalized costs were immaterial as of December 31, 2019 and 2018.

Vehicle Sales to Leasing Partners with a Resale Value Guarantee and a Buyback Option

We offer buyback options in connection with automotive sales with resale value guarantees with certain leasing partner sales in the United States. These transactions entail a transfer of leases, which we have originated with an end-customer, to our leasing partner. As control of the vehicles has not been transferred in accordance with the new revenue standard, these transactions were accounted for as interest bearing collateralized borrowings in accordance with ASC 840, *Leases*, prior to January 1, 2019. Under this program, cash is received for the full price of the vehicle and the collateralized borrowing value is generally recorded within resale value guarantees and the customer upfront down payment is recorded within deferred revenue. We amortize the deferred revenue amount to automotive leasing revenue on a straight-line basis over the option period and accrue interest expense based on our borrowing rate. The option period expires at the earlier of the end of the contractual option period or the pay-off of the initial loan. We capitalize vehicles under this program to operating lease vehicles, net, on the consolidated balance sheets, and we record depreciation from these vehicles to cost of automotive leasing revenue during the period the vehicle is under a lease arrangement. Cash received for these vehicles, net of revenue recognized during the period, is classified as collateralized lease (repayments) borrowings within cash flows from financing activities in the consolidated statements of cash flows. Following the adoption of ASC 842 on January 1, 2019, all new agreements under this program are accounted for as operating leases and there was no material change in the timing and amount of revenue recognized over the term. Consequently, any cash flows for new agreements are classified as operating cash activities on the consolidated statements of cash flows.

At the end of the lease term, we settle our liability in cash by either purchasing the vehicle from the leasing partner for the buyback option amount or paying a shortfall to the option amount the leasing partner may realize on the sale of the vehicle. Any remaining balances within deferred revenue and resale value guarantee will be settled to automotive leasing revenue. The end customers can extend the lease for a period of up to 6 months. In cases where the leasing partner retains ownership of the vehicle after the end of our option period, we expense the net value of the leased vehicle to cost of automotive leasing revenue. The maximum amount we could be required to pay under this program, should we decide to repurchase all vehicles, was $214 million and $480 million as of December 31, 2019 and 2018, respectively, including $178 million within a 12-month period from December 31, 2019. As of December 31, 2019 and 2018, we had $238 million and $558 million, respectively, of such borrowings recorded in resale value guarantees and $29 million and $93 million, respectively, recorded in deferred revenue liability. For the year ended December 31, 2019 and 2018, we recognized $186 million and $332 million, respectively, of leasing revenue related to this program. The net carrying amount of operating lease vehicles under this program was $190 million and $469 million, respectively, as of December 31, 2019 and 2018.

Vehicle Sales to Customers with a Resale Value Guarantee where Exercise is Probable

For certain international programs where we have offered resale value guarantees to certain customers who purchased vehicles and where we expect the customer has a significant economic incentive to exercise the resale value guarantee provided to them, we continue to recognize these transactions as operating leases. The process to determine whether there is a significant economic incentive includes a comparison of a vehicle's estimated market value at the time the option is exercisable with the guaranteed resale value to determine the customer's economic incentive to exercise. We have not sold any vehicles under this program since the first half of 2017 and all current period activity relates to the exercise or cancellation of active transactions. The amount of sale proceeds equal to the resale value guarantee is deferred until the guarantee expires or is exercised. The remaining sale proceeds are deferred and recognized on a straight-line basis over the stated guarantee period to automotive leasing revenue. The guarantee period expires at the earlier of the end of the guarantee period or the pay-off of the initial loan. We capitalize the cost of these vehicles on the consolidated balance sheet as operating lease vehicles, net, and depreciate their value, less salvage value, to cost of automotive leasing revenue over the same period.

In cases where a customer retains ownership of a vehicle at the end of the guarantee period, the resale value guarantee liability and any remaining deferred revenue balances related to the vehicle are settled to automotive leasing revenue, and the net book value of the leased vehicle is expensed to cost of automotive leasing revenue. If a customer returns the vehicle to us during the guarantee period, we purchase the vehicle from the customer in an amount equal to the resale value guarantee and settle any remaining deferred balances to automotive leasing revenue, and we reclassify the net book value of the vehicle on the consolidated balance sheets to used vehicle inventory. As of December 31, 2019 and 2018, $115 million and $150 million, respectively, of the guarantees were exercisable by customers within the next 12 months. For the year ended December 31, 2019 and 2018, we recognized $150 million and $158 million, respectively, of leasing revenue related to this program. The net carrying amount of operating lease vehicles under this program was $83 million and $212 million, respectively, as of December 31, 2019 and 2018.

Services and Other Revenue

Services and other revenue consists of non-warranty after-sales vehicle services, sales of used vehicles, retail merchandise, sales by our acquired subsidiaries to third party customers, and vehicle insurance revenue. There were no significant changes to the timing or amount of revenue recognition as a result of our adoption of the new revenue standard.

Revenues related to repair and maintenance services are recognized over time as services are provided and extended service plans are recognized over the performance period of the service contract as the obligation represents a stand-ready obligation to the customer. We sell used vehicles, services, service plans, vehicle components and merchandise separately and thus use standalone selling prices as the basis for revenue allocation to the extent that these items are sold in transactions with other performance obligations. Payment for used vehicles, services, and merchandise are typically received at the point when control transfers to the customer or in accordance with payment terms customary to the business. Payments received for prepaid plans are refundable upon customer cancellation of the related contracts and are included within customer deposits on the consolidated balance sheet. Deferred revenue related to services and other revenue was immaterial as of December 31, 2019 and 2018.

Energy Generation and Storage Segment

Energy Generation and Storage Sales

Energy generation and storage sales revenue consists of the sale of solar energy systems and energy storage systems to residential, small commercial, and large commercial and utility grade customers. Upon adoption of the new lease standard (refer to *Leases* section below for details), energy generation and storage sales revenue includes agreements for solar energy systems and power purchase agreements ("PPAs") that commence after January 1, 2019, as these are now accounted for under the new revenue standard. Sales of solar energy systems to residential and small scale commercial customers consist of the engineering, design, and installation of the system. Post installation, residential and small scale commercial customers receive a proprietary monitoring system that captures and displays historical energy generation data. Residential and small scale commercial customers pay the full purchase price of the solar energy system upfront. Revenue for the design and installation obligation is recognized when control transfers, which is when we install a solar energy system and the system passes inspection by the utility or the authority having jurisdiction. Revenue for the monitoring service is recognized ratably as a stand-ready obligation over the warranty period of the solar energy system. Sales of energy storage systems to residential and small scale commercial customers consist of the installation of the energy storage system and revenue is recognized when control transfers, which is when the product has been delivered or, if we are performing installation, when installed and commissioned. Payment for such storage systems is made upon invoice or in accordance with payment terms customary to the business.

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

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

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

We record as deferred revenue any non-refundable amounts that are collected from customers related to fees charged for prepayments and remote monitoring service and operations and maintenance service, which is recognized as revenue ratably over the respective customer contract term. As of December 31, 2019 and 2018, deferred revenue related to such customer payments amounted to $156 million and $149 million, respectively. Revenue recognized from the deferred revenue balance as of December 31, 2018 was $41 million for the year ended December 31, 2019. Revenue recognized from the deferred revenue balance as of January 1, 2018 was $41 million for the year ended December 31, 2018. We have elected the practical expedient to omit disclosure of the amount of the transaction price allocated to remaining performance obligations for energy generation and storage sales with an original expected contract length of one year or less and the amount that we have the right to invoice when that amount corresponds directly with the value of the performance to date. As of December 31, 2019, total transaction price allocated to performance obligations that were unsatisfied or partially unsatisfied for contracts with an original expected length of more than one year was $103 million. Of this amount, we expect to recognize $5 million in the next 12 months and the remaining over a period up to 28 years.

Energy Generation and Storage Leasing

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

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

We record as deferred revenue any amounts that are collected from customers, including lease prepayments, in excess of revenue recognized and operations and maintenance service, which is recognized as revenue ratably over the respective customer contract term. As of December 31, 2019 and 2018, deferred revenue related to such customer payments amounted to $226 million and $225 million, respectively. Deferred revenue also includes the portion of rebates and incentives received from utility companies and various local and state government agencies, which is recognized as revenue over the lease term. As of December 31, 2019 and December 31, 2018, deferred revenue from rebates and incentives amounted to $36 million and $37 million, respectively.

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

Revenue by source

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

	Year Ended December 31,	
	2019	2018
Automotive sales without resale value guarantee	$ 19,212	$ 15,810
Automotive sales with resale value guarantee (1)	146	1,403
Automotive regulatory credits	594	419
Energy generation and storage sales (2)	1,000	1,056
Services and other	2,226	1,391
Total revenues from sales and services	23,178	20,079
Automotive leasing	869	883
Energy generation and storage leasing (2)	531	499
Total revenues	$ 24,578	$ 21,461

(1) We made pricing adjustments to our vehicle offerings in 2019, which resulted in a reduction of automotive sales with resale value guarantee revenues. Refer to *Automotive Sales with Resale Value Guarantee* section above for details. The amount presented represents automotive sales with resale value guarantee in year ended December 31, 2019 net of such pricing adjustments impact.

(2) Under ASC 842, *Leases*, solar energy system sales and PPAs that commence after January 1, 2019, where we are the lessor and were previously accounted for as leases, no longer meet the definition of a lease and are instead accounted for in accordance with the new revenue standard (refer to the *Leases* section below for details).

Cost of Revenues

Automotive Segment

Automotive Sales

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.

Automotive Leasing

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.

Services and Other

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

Energy Generation and Storage Segment

Energy Generation and Storage

Energy generation and storage cost of 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.

Leases

In February 2016, the FASB issued ASU No. 2016-02 ("ASC 842"), Leases, to require lessees to recognize all leases, with certain exceptions, on the balance sheet, while recognition on the statement of operations will remain similar to lease accounting under ASC 840. Subsequently, the FASB issued ASU No. 2018-10, Codification Improvements to Topic 842, Leases, ASU No. 2018-11, Targeted Improvements, ASU No. 2018-20, Narrow-Scope Improvements for Lessors, and ASU 2019-01, Codification Improvements, to clarify and amend the guidance in ASU No. 2016-02. ASC 842 eliminates real estate-specific provisions and modifies certain aspects of lessor accounting. We adopted ASC 842 as of January 1, 2019 using the cumulative effect adjustment approach ("adoption of the new lease standard"). In addition, we elected the package of practical expedients permitted under the transition guidance within the new standard, which allowed us to carry forward the historical determination of contracts as leases, lease classification and not reassess initial direct costs for historical lease arrangements. Accordingly, previously reported financial statements, including footnote disclosures, have not been recast to reflect the application of the new standard to all comparative periods presented. The finance lease classification under ASC 842 includes leases previously classified as capital leases under ASC 840.

Agreements for solar energy system leases and PPAs (solar leases) that commence after January 1, 2019, where we are the lessor and were previously accounted for as operating leases no longer meet the definition of a lease upon the adoption of ASC 842 and are instead accounted for in accordance with the revenue standard. Under these two types of arrangements, the customer is not responsible for the design of the energy system but rather approved the energy system benefits in terms of energy capacity and production to be received over the term. Accordingly, the revenue from solar leases commencing after January 1, 2019 are now recognized as earned, based on the amount of capacity provided or electricity delivered at the contractual billing rates, assuming all other revenue recognition criteria have been met. Under the practical expedient available under ASC 606-10-55-18, we recognize revenue based on the value of the service which is consistent with the billing amount.

We have lease agreements with lease and non-lease components, and have elected to utilize the practical expedient to account for lease and non-lease components together as a single combined lease component, from both a lessee and lessor perspective. From a lessor perspective, the timing and pattern of transfer are the same for the non-lease components and associated lease component and, the lease component, if accounted for separately, would be classified as an operating lease. Additionally, leases previously identified as build-to-suit leasing arrangements under legacy lease accounting (ASC 840), were derecognized pursuant to the transition guidance provided for build-to-suit leases in ASC 842. Accordingly, these leases have been reassessed as operating leases as of the adoption date under ASC 842, and are included on the consolidated balance sheet as of December 31, 2019.

Operating lease assets are included within operating lease right-of-use assets, and the corresponding operating lease liabilities are included within accrued liabilities and other for the current portion, and within other long-term liabilities for the long-term portion on our consolidated balance sheet as of December 31, 2019. Finance lease assets are included within property, plant and equipment, net, and the corresponding finance lease liabilities are included within current portion of long-term debt and finance leases for the current portion, and within long-term debt and finance leases, net of current portion for the long-term portion on our consolidated balance sheet as of December 31, 2019.

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

Adoption of the new lease standard on January 1, 2019 had a material impact on our consolidated financial statements. The most significant impacts related to the (i) recognition of right-of-use ("ROU") assets of $1.29 billion and lease liabilities of $1.24 billion for operating leases on the consolidated balance sheet, and (ii) de-recognition of build-to-suit lease assets and liabilities of $1.62 billion and $1.74 billion, respectively, with the net impact of $97 million recorded to accumulated deficit, as of January 1, 2019. We also reclassified prepaid expenses and other current asset balances of $142 million and deferred rent balance, including tenant improvement allowances, and other liability balances of $70 million relating to our existing lease arrangements as of December 31, 2018, into the ROU asset balance as of January 1, 2019. ROU assets represent our right to use an underlying asset for the lease term and lease liabilities represent our obligation to make lease payments arising from the lease. The standard did not materially impact our consolidated statement of operations and consolidated statement of cash flows.

The cumulative effect of the changes made to our consolidated balance sheet as of January 1, 2019 for the adoption of the new lease standard was as follows (in millions):

	Balances at December 31, 2018	Adjustments from Adoption of New Lease Standard	Balances at January 1, 2019
Assets			
Prepaid expenses and other current assets	$ 366	$ —	$ 366
Property, plant and equipment, net	11,330	(1,617)	9,713
Operating lease right-of-use assets	—	1,286	1,286
Other assets	572	(141)	431
Liabilities			
Accrued liabilities and other	2,094	118	2,212
Current portion of long-term debt and finance leases	2,568	—	2,568
Long-term debt and finance leases, net of current portion	9,404	—	9,404
Other long-term liabilities	2,710	(687)	2,023
Equity			
Accumulated deficit	(5,318)	97	(5,221)

Research and Development Costs

Research and development costs are expensed as incurred.

Marketing, Promotional and Advertising Costs

Marketing, promotional and advertising costs are expensed as incurred and are included as an element of selling, general and administrative expense in the consolidated statement of operations. We incurred marketing, promotional and advertising costs of $27 million, $32 million and $37 million in the years ended December 31, 2019, 2018 and 2017, respectively, of which the majority is related to promotional activities.

Income Taxes

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

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

Comprehensive Income (Loss)

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

Stock-Based Compensation

We recognize compensation expense for costs related to all share-based payments, including stock options, restricted stock units ("RSUs") and our employee stock purchase plan (the "ESPP"). The fair value of stock option awards with only service and/or performance conditions and the ESPP is estimated on the grant or offering date using the Black-Scholes option-pricing model. The fair value of RSUs is measured on the grant date based on the closing fair market value of our common stock. Stock-based compensation expense is recognized on a straight-line basis over the requisite service period, net of actual forfeitures in the period.

For performance-based awards, stock-based compensation expense is recognized over the expected performance achievement period of individual performance milestones when the achievement of each individual performance milestone becomes probable. For performance-based awards with a vesting schedule based entirely on the attainment of both performance and market conditions, stock-based compensation expense associated with each tranche is recognized over the longer of (i) the expected achievement period for the operational milestone for such tranche and (ii) the expected achievement period for the related market capitalization milestone determined on the grant date, beginning at the point in time when the relevant operational milestone is considered probable of being met. If such operational milestone becomes probable any time after the grant date, we will recognize a cumulative catch-up expense from the grant date to that point in time. If the related market capitalization milestone is achieved earlier than its expected achievement period and the achievement of the related operational milestone, then the stock-based compensation expense will be recognized over the expected achievement period for the operational milestone, which may accelerate the rate at which such expense is recognized. The fair value of such awards is estimated on the grant date using Monte Carlo simulations (see Note 14, *Equity Incentive Plans*).

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

Noncontrolling Interests and Redeemable Noncontrolling Interests

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

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

Basic net income (loss) per share of common stock attributable to common stockholders is calculated by dividing net income (loss) attributable to common stockholders by the weighted-average shares of common stock outstanding for the period. During the year ended December 31, 2019, we increased net loss attributable to common stockholders by $8 million to arrive at the numerator used to calculate net loss per share. This adjustment represents the difference between the cash we paid to a financing fund investor for their noncontrolling interest in one of our subsidiaries and the carrying amount of the noncontrolling interest on our consolidated balance sheet, in accordance with ASC 260, *Earnings per Share*. Potentially dilutive shares, which are based on the weighted-average shares of common stock underlying outstanding stock-based awards, warrants and convertible senior notes using the treasury stock method or the if-converted method, as applicable, are included when calculating diluted net income (loss) per share of common stock attributable to common stockholders when their effect is dilutive. Since we intend to settle or have settled in cash the principal outstanding under our 0.25% Convertible Senior Notes due in 2019, 1.25% Convertible Senior Notes due in 2021, 2.375% Convertible Senior Notes due in 2022, 2.00% Convertible Senior Notes due in 2024 and 5.50% Convertible Senior Notes due in 2022 (assumed in our Maxwell Technologies, Inc. acquisition), we use the treasury stock method when calculating their potential dilutive effect, if any. Furthermore, in connection with the offerings of our notes, we entered into convertible note hedges and warrants (see Note 12, *Debt*). However, our convertible note hedges are not included when calculating potentially dilutive shares since their effect is always anti-dilutive. Warrants which have a strike price above our share price were out of the money and have not been included in the table below.

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

	Year Ended December 31,		
	2019	2018	2017
Stock-based awards	10	10	10
Convertible senior notes	1	1	2
Warrants	—	—	1

Business Combinations

We account for business acquisitions under ASC 805, *Business Combinations*. The total purchase consideration for an acquisition is measured as the fair value of the assets given, equity instruments issued and liabilities assumed at the acquisition date. Costs that are directly attributable to the acquisition are expensed as incurred. Identifiable assets (including intangible assets), liabilities assumed (including contingent liabilities) and noncontrolling interests in an acquisition are measured initially at their fair values at the acquisition date. We recognize goodwill if the fair value of the total purchase consideration and any noncontrolling interests is in excess of the net fair value of the identifiable assets acquired and the liabilities assumed. We recognize a bargain purchase gain within other income (expense), net, on the consolidated statement of operations if the net fair value of the identifiable assets acquired and the liabilities assumed is in excess of the fair value of the total purchase consideration and any noncontrolling interests. We include the results of operations of the acquired business in the consolidated financial statements beginning on the acquisition date.

Cash and Cash Equivalents

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

Restricted Cash

We maintain certain cash balances restricted as to withdrawal or use. Our restricted cash is comprised primarily of cash as collateral for our sales to lease partners with a resale value guarantee, letters of credit, real estate leases, insurance policies, credit card borrowing facilities and certain operating leases. In addition, restricted cash includes cash received from certain fund investors that have not been released for use by us and cash held to service certain payments under various secured debt facilities.

The following table totals cash and cash equivalents and restricted cash as reported on the consolidated balance sheets; the sums are presented in the consolidated statements of cash flows (in millions):

	December 31, 2019	December 31, 2018	December 31, 2017	December 31, 2016
Cash and cash equivalents	$ 6,268	$ 3,686	$ 3,368	$ 3,393
Restricted cash, current portion	246	193	155	106
Restricted cash, net of current portion	269	398	442	268
Total as presented in the consolidated statements of cash flows	$ 6,783	$ 4,277	$ 3,965	$ 3,767

Accounts Receivable and Allowance for Doubtful Accounts

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

We typically do not carry significant accounts receivable related to our vehicle and related sales as customer payments are due prior to vehicle delivery, except for amounts due from commercial financial institutions for approved financing arrangements between our customers and the financial institutions.

MyPower Customer Notes Receivable

We have customer notes receivable under the legacy MyPower loan program. MyPower was offered by SolarCity to provide residential customers with the option to finance the purchase of a solar energy system through a 30-year loan. The outstanding balances, net of any allowance for potentially uncollectible amounts, are presented on the consolidated balance sheet as a component of prepaid expenses and other current assets for the current portion and as MyPower customer notes receivable, net of current portion, for the long-term portion. In determining the allowance and credit quality for customer notes receivable, we identify significant customers with known disputes or collection issues and also consider our historical level of credit losses and current economic trends that might impact the level of future credit losses. Customer notes receivable that are individually impaired are charged-off as a write-off of the allowance for losses. Since acquisition, there have been no new significant customers with known disputes or collection issues, and the amount of potentially uncollectible amounts has been insignificant. In addition, there were no material non-accrual or past due customer notes receivable as of December 31, 2019.

Concentration of Risk

Credit Risk

Financial instruments that potentially subject us to a concentration of credit risk consist of cash, cash equivalents, restricted cash, accounts receivable, convertible note hedges, and interest rate swaps. Our cash balances are primarily invested in money market funds or on deposit at high credit quality financial institutions in the U.S. These deposits are typically in excess of insured limits. As of December 31, 2019 and 2018, no entity represented 10% or more of our total accounts receivable balance . The risk of concentration for our interest rate swaps is mitigated by transacting with several highly-rated multinational banks.

Supply Risk

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 in a timely manner at prices, quality levels and volumes acceptable to us, or our inability to efficiently manage these components from these suppliers, could have a material adverse effect on our business, prospects, financial condition and operating results.

Inventory Valuation

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

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

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

Operating Lease Vehicles

Vehicles that are leased as part of our direct vehicle leasing program, vehicles delivered to leasing partners with a resale value guarantee and a buyback option, and vehicles delivered to customers with resale value guarantee where exercise is probable are classified as operating lease vehicles as the related revenue transactions are treated as operating leases under ASC 842 (refer to the *Automotive Leasing Revenue* section above for details). Operating lease vehicles are recorded at cost less accumulated depreciation. We generally depreciate their value, less salvage value, using the straight-line-method to cost of automotive leasing revenue over the contractual period. The total cost of operating lease vehicles recorded on the consolidated balance sheets as of December 31, 2019 and 2018 was $2.85 billion and $2.55 billion, respectively. Accumulated depreciation related to leased vehicles as of December 31, 2019 and 2018 was $406 million and $458 million, respectively.

Solar Energy Systems, Net

We are the lessor of solar energy systems. Prior to January 1, 2019, these leases were accounted for as operating leases in accordance with ASC 840. Under ASC 840, to determine lease classification, we evaluated the lease terms to determine whether there was a transfer of ownership or bargain purchase option at the end of the lease, whether the lease term was greater than 75% of the useful life or whether the present value of the minimum lease payments exceeded 90% of the fair value at lease inception. As discussed in the *Leases* section above, agreements for solar energy system leases and PPAs that commence after January 1, 2019 no longer meet the definition of a lease upon the adoption of ASC 842 and are instead accounted for in accordance with the new revenue standard. We utilize periodic appraisals to estimate useful lives and fair values at lease inception and residual values at lease termination. Solar energy systems are stated at cost less accumulated depreciation.

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

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

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

Property, Plant and Equipment, net

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

Machinery, equipment, vehicles and office furniture	2 to 12 years
Building and building improvements	15 to 30 years
Computer equipment and software	3 to 10 years

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

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

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

Prior to the adoption of the new lease standard, we were deemed to be the owner, for accounting purposes, during the construction phase of certain long-lived assets under build-to-suit lease arrangements because of our involvement with the construction, our exposure to any potential cost overruns or our other commitments under the arrangements. In accordance with ASC 840, we recognized build-to-suit lease assets under construction and corresponding build-to-suit lease liabilities on the consolidated balance sheet. Once construction was completed, if a lease met certain “sale-leaseback” criteria, we removed the asset and liability and accounted for the lease as an operating lease. Otherwise, the lease was accounted for as a capital lease. 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 December 31, 2019 (refer to *Leases* section above for details).

Long-Lived Assets Including Acquired Intangible Assets

We review our property, plant and equipment, long-term prepayments and intangible assets for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset (or asset group) may not be recoverable. We measure recoverability by comparing the carrying amount to the future undiscounted cash flows that the asset is expected to generate. If the asset is not recoverable, its carrying amount would be adjusted-down to its fair value. For the years ended December 31, 2019 and 2018, we have recognized certain impairments of our long-lived assets (refer to Note 4, *Goodwill and Intangible Assets* and Note 22, *Restructuring and Other*, for further details). For the year ended December 31, 2017, we have recognized no material impairments of our long-lived assets.

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

Goodwill

We assess goodwill for impairment annually in the fourth quarter, or more frequently if events or changes in circumstances indicate that it might be impaired, by comparing its carrying value to the reporting unit’s fair value. For the years ended December 31, 2019, 2018, and 2017, we had not recognized any impairment of goodwill.

Capitalization of Software Costs

For costs incurred in development of internal use software, we capitalize costs incurred during the application development stage. Costs related to preliminary project activities and post-implementation activities are expensed as incurred. Internal use software is amortized on a straight-line basis over its estimated useful life of three to ten years. We evaluate the useful lives of these assets on an annual basis, and we test for impairment whenever events or changes in circumstances occur that could impact the recoverability of these assets.

Foreign Currency

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

Foreign currency transaction gains and losses are a result of the effect of exchange rate changes on transactions denominated in currencies other than the functional currency. Transaction gains and losses are recognized in other income (expense), net, in the consolidated statements of operations. For the years ended December 31, 2019, 2018 and 2017, we recorded foreign currency transaction gains of $48 million, gains of $2 million and losses of $52 million, respectively.

Warranties

We provide a manufacturer's warranty on all new and used vehicles and production powertrain components and systems we sell. In addition, we also provide a warranty on the installation and components of the energy generation and storage systems we sell for periods typically between 10 to 25 years. We accrue a warranty reserve for the products sold by us, which includes our best estimate of the projected costs to repair or replace items under warranties and recalls when identified. These estimates are based on actual claims incurred to date and an estimate of the nature, frequency and costs of future claims. These estimates are inherently uncertain given our relatively short history of sales, and changes to our historical or projected warranty experience may cause material changes to the warranty reserve in the future. The warranty reserve does not include projected warranty costs associated with our vehicles subject to lease accounting and our solar energy systems under lease contracts or PPAs, as the costs to repair these warranty claims are expensed as incurred. The portion of the warranty reserve expected to be incurred within the next 12 months is included within accrued liabilities and other, while the remaining balance is included within other long-term liabilities on the consolidated balance sheets. Warranty expense is recorded as a component of cost of revenues in the consolidated statements of operations. Due to the magnitude of our automotive business, accrued warranty balance as of December 31, 2019 was primarily related to our automotive segment. Accrued warranty activity consisted of the following (in millions):

	Year Ended December 31,		
	2019	2018	2017
Accrued warranty—beginning of period	$ 748	$ 402	$ 267
Assumed warranty liability from acquisition	—	—	5
Warranty costs incurred	(250)	(209)	(123)
Net changes in liability for pre-existing warranties, including expirations and foreign exchange impact	36	(26)	4
Additional warranty accrued from adoption of the new revenue standard	—	37	—
Provision for warranty	555	544	249
Accrued warranty—end of period	$ 1,089	$ 748	$ 402

For the years ended December 31, 2019 and 2018 , and 2017, warranty costs incurred for vehicles accounted for as operating leases were $20 million, $22 million and $36 million, respectively .

Solar Renewable Energy Credits

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

Deferred Investment Tax Credit Revenue

We have solar energy systems that are eligible for ITCs that accrue to eligible property under the Internal Revenue Code ("IRC"). Under Section 50(d)(5) of the IRC and the related regulations, a lessor of qualifying property may elect to treat the lessee as the owner of such property for the purposes of claiming the ITCs associated with such property. These regulations enable the ITCs to be separated from the ownership of the property and allow the transfer of the ITCs. Under our lease pass-through fund arrangements, we can make a tax election to pass-through the ITCs to the investors, who are the legal lessee of the property. Therefore, we are able to monetize these ITCs to the investors who can utilize them in return for cash payments. We consider the monetization of ITCs to constitute one of the key elements of realizing the value associated with solar energy systems. Consequently, we consider the proceeds from the monetization of ITCs to be a component of revenue generated from solar energy systems.

Under the new revenue standard, we recognize revenue upon the delivery of ITCs to investors under our lease pass-through fund arrangements as this is the point in time that control of ITCs has transferred.

We indemnify the investors for any recapture of ITCs due to our non-compliance. We have concluded that the likelihood of a recapture event is remote, and consequently, we have not recognized a liability for this indemnification on the consolidated balance sheets.

Nevada Tax Incentives

We had entered into agreements with the State of Nevada and Storey County in Nevada that provide abatements for sales, use, real property, personal property and employer excise taxes, discounts to the base tariff energy rates and transferable tax credits. These incentives are available for the applicable periods beginning on October 17, 2014 and ending on either June 30, 2024 or June 30, 2034 (depending on the incentive). Under these agreements, we were eligible for a maximum of $195 million of transferable tax credits, subject to capital investments by us and our partners for Gigafactory Nevada of at least $3.50 billion, which we exceeded during 2017, and specified hiring targets for Gigafactory Nevada, which we exceeded during 2018. We recorded these credits as earned when we had evidence there was a market for their sale. Credits were applied as a cost offset to either employee expense or to capital assets, depending on the source of the credits. Credits earned from employee hires or capital spending by our partners at Gigafactory Nevada were recorded as a reduction to operating expenses. As of December 31, 2019 and 2018, we had earned the maximum of $195 million of transferable tax credits under these agreements.

Recent Accounting Pronouncements

Recently issued accounting pronouncements not yet adopted

In June 2016, the FASB issued ASU No. 2016-13, Measurement of Credit Losses on Financial Instruments, to require financial assets carried at amortized cost to be presented at the net amount expected to be collected based on historical experience, current conditions and forecasts. Subsequently, the FASB issued ASU No. 2018-19, Codification Improvements to Topic 326, to clarify that receivables arising from operating leases are within the scope of lease accounting standards. Further, the FASB issued ASU No. 2019-04, ASU No. 2019-05, ASU 2019-10 and ASU 2019-11 to provide additional guidance on the credit losses standard. The ASUs are effective for interim and annual periods beginning after December 15, 2019, with early adoption permitted. Adoption of the ASUs is on a modified retrospective basis. We plan to adopt the ASUs on January 1, 2020. The ASUs are currently not expected to have a material impact on our consolidated financial statements.

In January 2017, the FASB issued ASU No. 2017-04, Simplifying the Test for Goodwill Impairment, to simplify the test for goodwill impairment by removing Step 2. An entity will, therefore, perform the goodwill impairment test by comparing the fair value of a reporting unit with its carrying amount and recognizing an impairment charge for the amount by which the carrying amount exceeds the fair value, not to exceed the total amount of goodwill allocated to the reporting unit. An entity still has the option to perform a qualitative assessment to determine if the quantitative impairment test is necessary. The ASU is effective for interim and annual periods beginning after December 15, 2019, with early adoption permitted. Adoption of the ASU is prospective. We plan to adopt the ASU prospectively on January 1, 2020. The ASU is currently not expected to have a material impact on our consolidated financial statements.

In August 2018, the FASB issued ASU No. 2018-15, Customer’s Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement that Is a Service Contract. The ASU aligns the requirements for capitalizing implementation costs incurred in a hosting arrangement that is a service contract with the requirements for capitalizing implementation costs incurred to develop or obtain internal-use software (and hosting arrangements that include an internal-use software license). The ASU is effective for interim and annual periods beginning after December 15, 2019, with early adoption permitted. Adoption of the ASU is either retrospective or prospective. We plan to adopt the ASU prospectively on January 1, 2020. The ASU is currently not expected to have a material impact on our consolidated financial statements.

In December 2019, the FASB issued ASU No. 2019-12, Simplifying the Accounting for Income Taxes, as part of its initiative to reduce complexity in accounting standards. The amendments in the ASU are effective for fiscal years beginning after December 15, 2020, including interim periods therein. Early adoption of the standard is permitted, including adoption in interim or annual periods for which financial statements have not yet been issued. We have not early adopted this ASU for 2019. The ASU is currently not expected to have a material impact on our consolidated financial statements.

Recently adopted accounting pronouncements

In February 2016, the FASB issued ASU No. 2016-02, Leases, to require lessees to recognize all leases, with limited exceptions, on the balance sheet, while recognition on the statement of operations will remain similar to legacy lease accounting, ASC 840. The ASU also eliminates real estate-specific provisions and modifies certain aspects of lessor accounting. Subsequently, the FASB issued ASU No. 2018-10, *Codification Improvements to Topic 842*, ASU No. 2018-11, *Targeted Improvements*, ASU No. 2018-20, *Narrow-Scope Improvements for Lessors*, and ASU 2019-01, *Codification Improvements*, to clarify and amend the guidance in ASU No. 2016-02. We adopted the ASUs on January 1, 2019 on a modified retrospective basis through a cumulative adjustment to our beginning accumulated deficit balance. Prior comparative periods have not been recast under this method, and we adopted all available practical expedients, as applicable. Further, solar leases that commence on or after January 1, 2019, where we are the lessor and which were accounted for as leases under ASC 840, will no longer meet the definition of a lease. Instead, solar leases commencing on or after January 1, 2019 will be accounted for under the new revenue standard. In addition to recognizing operating leases that were previously not recognized on the consolidated balance sheet, our build-to-suit leases were also de-recognized with a net decrease of approximately $97 million to our beginning accumulated deficit after income tax effects, as our build-to-suit leases no longer qualify for build-to-suit accounting and are instead recognized as operating leases. Upon adoption, our consolidated balance sheet include an overall reduction in assets of $473 million and a reduction in liabilities of $570 million. The adoption of the ASUs did not have a material impact on the consolidated statement of operations or the consolidated statement of cash flows.

In August 2017, the FASB issued ASU No. 2017-12, *Targeted Improvements to Accounting for Hedging Activities*, to simplify the application of current hedge accounting guidance. The ASU expands and refines hedge accounting for both non-financial and financial risk components and aligns the recognition and presentation of the effects of the hedging instrument and the hedged item in the financial statements. We adopted the ASU prospectively on January 1, 2019, and the ASU did not have a material impact on the consolidated financial statements.

In January 2018, the FASB issued ASU No. 2018-01, *Land Easement Practical Expedient Transition to Topic 842*, to permit an entity to elect a practical expedient to not re-evaluate land easements that existed or expired before the entity's adoption of ASU No. 2016-02, *Leases*, and that were not accounted for as leases. The ASU did not have a material impact on the consolidated financial statements.

Note 3 – Business Combinations

Maxwell Acquisition

On May 16, 2019 (the "Acquisition Date"), we completed our strategic acquisition of Maxwell Technologies, Inc. ("Maxwell"), an energy storage and power delivery products company, for its complementary technology and workforce. Pursuant to the related Agreement and Plan of Merger (the "Merger Agreement"), each issued and outstanding share of Maxwell common stock was converted into 0.0193 (the "Exchange Ratio") shares of our common stock. In addition, Maxwell's stock option awards and restricted stock unit awards were assumed by us and converted into corresponding equity awards in respect of our common stock based on the Exchange Ratio, with the awards retaining the same vesting and other terms and conditions as in effect immediately prior to the acquisition.

Fair Value of Purchase Consideration

The Acquisition Date fair value of the purchase consideration was $207 million (902,968 shares issued at $229.49 per share, the opening price of our common stock on the Acquisition Date).

Fair Value of Assets Acquired and Liabilities Assumed

We accounted for the acquisition using the purchase method of accounting for business combinations under ASC 805, *Business Combinations*. The total purchase price is allocated to the tangible and identifiable intangible assets acquired and liabilities based on their estimated fair values as of the Acquisition Date.

Fair value estimates are based on a complex series of judgments about future events and uncertainties and rely heavily on estimates and assumptions. The judgments used to determine the estimated fair value assigned to each class of assets acquired and liabilities assumed, as well as asset lives and the expected future cash flows and related discount rates, can materially impact our consolidated financial statements. Significant inputs used for the model included the amount of cash flows, the expected period of the cash flows and the discount rates. In 2019, we finalized our estimate of the Acquisition Date fair values of the assets acquired and the liabilities assumed and there were no changes to the fair values of the assets acquired and the liabilities assumed.

The allocation of the purchase price is based on management's estimate of the Acquisition Date fair values of the assets acquired and liabilities assumed, as follows (in millions):

Assets acquired:		
Cash and cash equivalents	$	32
Accounts receivable		24
Inventory		32
Property, plant and equipment, net		27
Operating lease right-of-use assets		10
Intangible assets		105
Prepaid expenses and other assets, current and non-current		3
Total assets acquired		233
Liabilities and equity assumed:		
Accounts payable		(10)
Accrued liabilities and other		(28)
Debt and finance leases, current and non-current		(44)
Deferred revenue, current		(1)
Other long-term liabilities		(14)
Additional paid-in capital		(8)
Total liabilities and equity assumed		(105)
Net assets acquired		128
Goodwill		79
Total purchase price	$	207

Goodwill represented the excess of the purchase price over the fair value of the net assets acquired and was primarily attributable to the expected synergies from integrating Maxwell's technology into our automotive segment as well as the acquired talent. Goodwill is not deductible for U.S. income tax purposes and is not amortized.

Identifiable Intangible Assets Acquired

The determination of the fair value of identified intangible assets and their respective useful lives are as follows (in millions, except for estimated useful life):

		Fair Value	Useful Life (in years)
Developed technology	$	102	9
Customer relations		2	9
Trade name		1	10
Total intangible assets	$	105	

Maxwell's results of operations since the Acquisition Date have been included within the automotive segment. Standalone and pro forma results of operations have not been presented because they were not material to the consolidated financial statements.

Other Acquisitions

During the year ended December 31, 2019, we completed various other acquisitions generally for the related technology and workforce. Total consideration for these acquisitions was $96 million, of which $80 million was paid in cash. In aggregate, $36 million was attributed to intangible assets, $51 million was attributed to goodwill within the automotive segment, and $9 million was attributed to net assets assumed. Goodwill is not deductible for U.S. income tax purposes. The identifiable intangible assets were related to purchased technology, with estimated useful lives of one to nine years.

Standalone and pro forma results of operations have not been presented because they were not material to the consolidated financial statements, either individually or in aggregate.

Note 4 – Goodwill and Intangible Assets

Goodwill increased $130 million from $68 million as of December 31, 2018 to $198 million as of December 31, 2019 primarily due to completed business combinations during the year ended December 31, 2019 (see Note 3, *Business Combinations*). There were no accumulated impairment losses as of December 31, 2019 and 2018.

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

	December 31, 2019				December 31, 2018			
	Gross Carrying Amount	Accumulated Amortization	Other	Net Carrying Amount	Gross Carrying Amount	Accumulated Amortization	Other	Net Carrying Amount
Finite-lived intangible assets:								
Developed technology	$ 291	$ (72)	$ 1	$ 220	$ 152	$ (40)	$ 1	$ 113
Trade names	3	(1)	1	3	45	(44)	—	1
Favorable contracts and leases, net	113	(24)	—	89	113	(17)	—	96
Other	38	(16)	—	22	36	(12)	1	25
Total finite-lived intangible assets	445	(113)	2	334	346	(113)	2	235
Indefinite-lived intangible assets:								
Gigafactory Nevada water rights	5	—	—	5	—	—	—	—
In-process research and development ("IPR&D")	60	—	(60)	—	60	—	(13)	47
Total indefinite-lived intangible assets	65	—	(60)	5	60	—	(13)	47
Total intangible assets	$ 510	$ (113)	$ (58)	$ 339	$ 406	$ (113)	$ (11)	$ 282

During 2019, the Company determined to abandon further development efforts on the IPR&D and therefore impaired the remaining $47 million in restructuring and other expenses in the consolidated statement of operations. Amortization expense during the years ended December 31, 2019, 2018 and 2017 was $44 million, $66 million and $40 million, respectively.

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

2020	$ 50
2021	49
2022	48
2023	42
2024	27
Thereafter	118
Total	$ 334

Note 5 – Fair Value of Financial Instruments

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

	December 31, 2019				December 31, 2018			
	Fair Value	Level I	Level II	Level III	Fair Value	Level I	Level II	Level III
Money market funds (cash and cash equivalents & restricted cash)	$ 1,632	$ 1,632	$ —	$ —	$ 1,813	$ 1,813	$ —	$ —
Interest rate swap asset	1	—	1	—	12	—	12	—
Interest rate swap liability	(27)	—	(27)	—	(1)	—	(1)	—
Total	$ 1,606	$ 1,632	$ (26)	$ —	$ 1,824	$ 1,813	$ 11	$ —

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 year ended December 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 millions):

	December 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	$ 821	$ 1	$ 27	$ 800	$ 12	$ 1

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

	Year Ended December 31, 2019	2018	2017
Gross gains	$ 11	$ 22	$ 7
Gross losses	$ 51	$ 12	$ 13

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, participation interest and debt. The carrying values of these financial instruments other than our 1.25% Convertible Senior Notes due in 2021, 2.375% Convertible Senior Notes due in 2022 and 2.00% Convertible Senior Notes due in 2024 and our subsidiary's Zero-Coupon Convertible Senior Notes due in 2020 (collectively referred to as "Convertible Senior Notes" below), 5.30% Senior Notes due in 2025, solar asset-backed notes and solar loan-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 our solar asset-backed notes and solar loan-backed notes based on rates currently offered for instruments with similar maturities and terms (Level III). The following table presents the estimated fair values and the carrying values (in millions):

	December 31, 2019		December 31, 2018	
	Carrying Value	Fair Value	Carrying Value	Fair Value
Convertible Senior Notes	$ 3,686	$ 6,067	$ 3,661	$ 4,347
5.30% Senior Notes due in 2025	$ 1,782	$ 1,748	$ 1,779	$ 1,575
Solar asset-backed notes	$ 1,155	$ 1,211	$ 1,183	$ 1,207
Solar loan-backed notes	$ 175	$ 189	$ 203	$ 212

Note 6 – Inventory

Our inventory consisted of the following (in millions):

	December 31, 2019	December 31, 2018
Raw materials	$ 1,428	$ 932
Work in process	362	297
Finished goods (1)	1,356	1,581
Service parts	406	303
Total	$ 3,552	$ 3,113

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

For solar energy systems, we commence transferring component parts from inventory to construction in progress, a component of solar energy systems, once a lease or PPA contract with a customer has been executed and installation has been initiated. Additional costs incurred on the leased solar energy systems, including labor and overhead, are recorded within 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 years ended December 31, 2019, 2018 and 2017, we recorded write-downs of $138 million, $78 million and $124 million, respectively, in cost of revenues.

Note 7 – Solar Energy Systems, Net

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

	December 31, 2019	December 31, 2018
Solar energy systems in service	$ 6,682	$ 6,431
Initial direct costs related to customer solar energy system lease acquisition costs	102	99
	6,784	6,530
Less: accumulated depreciation and amortization (1)	(723)	(496)
	6,061	6,034
Solar energy systems under construction	18	68
Solar energy systems pending interconnection	59	169
Solar energy systems, net (2)	$ 6,138	$ 6,271

(1) Depreciation and amortization expense during the years ended December 31, 2019, 2018 and 2017 was $227 million, $276 million, and $213 million, respectively.

(2) As of December 31, 2019 and 2018, solar energy systems, net, included $36 million of gross finance leased assets with accumulated depreciation and amortization of $6 million and $4 million, respectively.

Note 8 – Property, Plant and Equipment, Net

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

	December 31, 2019	December 31, 2018
Machinery, equipment, vehicles and office furniture	$ 7,167	$ 6,329
Tooling	1,493	1,398
Leasehold improvements	1,087	961
Land and buildings	3,024	4,047
Computer equipment, hardware and software	595	487
Construction in progress	764	807
	14,130	14,029
Less: Accumulated depreciation	(3,734)	(2,699)
Total	$ 10,396	$ 11,330

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 December 31, 2019 (see Note 2, *Summary of Significant Accounting Policies*).

Construction in progress is primarily comprised of tooling and equipment related to the manufacturing of our products and Gigafactory Shanghai 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 years ended December 31, 2019 and 2018, we capitalized $31 million and $55 million, respectively, of interest.

Depreciation expense during the years ended December 31, 2019, 2018 and 2017 was $1.37 billion, $1.11 billion and $769 million, respectively. Gross property plant and equipment under finance leases as of December 31, 2019 and 2018 was $2.08 billion and $1.52 billion, respectively. Accumulated depreciation on property, plant and equipment under finance leases as of these dates was $483 million and $232 million, respectively.

Panasonic has partnered with us on Gigafactory Nevada with investments in the production equipment that it uses to manufacture and supply us with battery cells. Under our arrangement with Panasonic, we plan to purchase the full output from their production equipment at negotiated prices. As the terms of the arrangement convey a finance lease under ASC 842, *Leases*, we account for their production equipment as leased assets when production commences. This results in us recording the cost of their production equipment within property, plant and equipment, net, on the consolidated balance sheets with a corresponding liability recorded to debt and finance leases. As of December 31, 2019 and 2018, we had cumulatively capitalized costs of $1.73 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 Nevada, including costs under our Panasonic arrangement, of $5.27 billion and $4.62 billion as of December 31, 2019 and 2018, respectively.

In 2019, the Shanghai government agreed to provide $85 million of certain incentives in connection with us making certain manufacturing equipment investments at Gigafactory Shanghai, of which $46 million was received in cash and the remaining $39 million was in the form of assets and services contributed by the government. These incentives were taken as a reduction to property, plant and equipment, net, on the consolidated balance sheet.

Note 9 – Accrued Liabilities and Other

As of December 31, 2019 and 2018, accrued liabilities and other current liabilities consisted of the following (in millions):

	December 31, 2019	December 31, 2018
Accrued purchases (1)	$ 638	$ 394
Payroll and related costs	466	449
Taxes payable (2)	611	348
Accrued interest	86	78
Financing obligation, current portion	57	62
Accrued warranty, current portion	344	201
Sales return reserve, current portion	272	108
Build-to-suit lease liability, current portion	—	82
Operating lease right-of-use liabilities, current portion	228	—
Other current liabilities	203	372
Total	$ 2,905	$ 2,094

(1) Accrued purchases primarily reflects receipts of goods and services that we had not been invoiced yet. As we are invoiced for these goods and services, this balance will reduce and accounts payable will increase.
(2) Taxes payable includes value added tax, sales tax, property tax, use tax and income tax payables.

Due to price adjustments we made to our vehicle offerings during 2019, we increased our sales return reserve significantly on vehicles previously sold under our buyback options program. See Note 2, *Summary of Significant Accounting Policies* for details.

As of December 31, 2018, the table above included $82 million of 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 December 31, 2019.

Note 10 – Other Long-Term Liabilities

As of December 31, 2019 and 2018, other long-term liabilities consisted of the following (in millions):

	December 31, 2019	December 31, 2018
Accrued warranty reserve	$ 745	$ 547
Build-to-suit lease liability	—	1,662
Operating lease right-of-use liabilities	956	—
Deferred rent expense	—	59
Financing obligation	37	50
Sales return reserve	545	84
Other noncurrent liabilities	372	308
Total other long-term liabilities	$ 2,655	$ 2,710

As of December 31, 2018, the table above included $1.66 billion of 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 December 31, 2019.

Due to price adjustments we made to our vehicle offerings during 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 11 – 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. 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 December 31, 2019 and December 31, 2018, we held $726 million and $793 million, respectively, in customer deposits.

Note 12 –Debt

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

	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	$ —	$ 1,304	$ —	1.25%	March 2021
2.375% Convertible Senior Notes due in 2022 ("2022 Notes")	978	—	902	—	2.375%	March 2022
2.00% Convertible Senior Notes due in 2024 ("2024 Notes")	1,840	—	1,383	—	2.00%	May 2024
5.30% Senior Notes due in 2025 ("2025 Notes")	1,800	—	1,782	—	5.30%	August 2025
Credit Agreement	1,727	141	1,586	499	2.7%-4.8%	June 2020-July 2023
Zero-Coupon Convertible Senior Notes due in 2020	103	97	—	—	0.0%	December 2020
Solar Bonds and other Loans	70	15	53	—	3.6%-5.8%	March 2020-January 2031
Total recourse debt	7,898	253	7,010	499		
Non-recourse debt:						
Automotive Asset-backed Notes	1,577	573	997	—	2.0%-7.9%	February 2020- May 2023
Solar Asset-backed Notes	1,183	32	1,123	—	4.0%-7.7%	September 2024-February 2048
China Loan Agreements	741	444	297	1,542	3.7%-4.0%	September 2020-December 2024
Cash Equity Debt	454	10	430	—	5.3%-5.8%	July 2033-January 2035
Solar Loan-backed Notes	182	11	164	—	4.8%-7.5%	September 2048-September 2049
Warehouse Agreements	167	21	146	933	3.1%-3.6%	September 2021
Solar Term Loans	161	8	152	—	5.4%	January 2021
Canada Credit Facility	40	24	16	—	4.2%-5.9%	November 2022
Solar Renewable Energy Credit and other Loans	89	23	67	6	4.5%-7.4%	March 2020-June 2022
Total non-recourse debt	4,594	1,146	3,392	2,481		
Total debt	$ 12,492	$ 1,399	$ 10,402	$ 2,980		

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

	Unpaid Principal Balance	Net Carrying Value Current	Net Carrying Value 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	$ 913	$ —	$ —	0.25%	March 2019
2021 Notes	1,380	—	1,244	—	1.25%	March 2021
2022 Notes	978	—	871	—	2.375%	March 2022
2025 Notes	1,800	—	1,779	—	5.30%	August 2025
Credit Agreement	1,540	—	1,540	231	1% plus LIBOR	June 2020
1.625% Convertible Senior Notes due in 2019	566	541	—	—	1.625%	November 2019
Zero-Coupon Convertible Senior Notes due in 2020	103	—	92	—	0.0%	December 2020
Vehicle, Solar Bonds and other Loans	101	1	100	—	1.8%-7.6%	January 2019-January 2031
Total recourse debt	7,388	1,455	5,626	231		
Non-recourse debt:						
Solar Asset-backed Notes	1,214	28	1,155	—	4.0%-7.7%	September 2024-February 2048
Automotive Asset-backed Notes	1,178	468	704	—	2.3%-7.9%	December 2019-June 2022
Cash Equity Debt	467	11	442	—	5.3%-5.8%	July 2033-January 2035
Solar Term Loans	350	188	162	—	6.0%-6.1%	January 2019-January 2021
Solar Loan-backed Notes	210	10	193	—	4.8%-7.5%	September 2048-September 2049
Warehouse Agreements	92	14	78	1,008	3.9%-4.2%	September 2020
Canada Credit Facility	73	32	41	—	3.6%-5.9%	November 2022
Solar Renewable Energy Credit and other Loans	27	16	10	18	5.1%-7.9%	December 2019-July 2021
Total non-recourse debt	3,611	767	2,785	1,026		
Total debt	$ 10,999	$ 2,222	$ 8,411	$ 1,257		

(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.

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

2019 Notes, 2021 Notes, Bond Hedges and Warrant Transactions

In March 2014, we issued $800 million in aggregate principal amount of 0.25% Convertible Senior Notes due in March 2019 and $1.20 billion in aggregate principal amount of 1.25% Convertible Senior Notes due in March 2021 in a public offering. In April 2014, we issued an additional $120 million in aggregate principal amount of the 2019 Notes and $180 million in aggregate principal amount of the 2021 Notes, pursuant to the exercise in full of the overallotment options by the underwriters. The total net proceeds from the issuances, after deducting transaction costs, were $906 million for the 2019 Notes and $1.36 billion for the 2021 Notes.

Each $1,000 of principal of these notes is initially convertible into 2.7788 shares of our common stock, which is equivalent to an initial conversion price of $359.87 per share, subject to adjustment upon the occurrence of specified events. Holders of these notes had the option to convert on or after December 1, 2018 for the 2019 Notes and may elect to convert on or after December 1, 2020 for the 2021 Notes. The settlement of such an election to convert the 2019 Notes was in cash and/or shares of our common stock, which we settled in cash on the maturity date. The settlement of such an election to convert the 2021 Notes would be in cash for the principal amount and, if applicable, cash and/or shares of our common stock for any conversion premium at our election. Further, holders of these notes may convert, at their option, prior to the respective dates above only under the following circumstances: (1) during a quarter in which the closing price of our common stock for at least 20 trading days (whether or not consecutive) during the last 30 consecutive trading days immediately preceding the quarter is greater than or equal to 130% of the conversion price; (2) during the five-business day period following any five-consecutive trading day period in which the trading price of these notes is less than 98% of the product of the closing price of our common stock and the applicable conversion rate for each day during such five-consecutive trading day period, or (3) if we make specified distributions to holders of our common stock or if specified corporate transactions occur. Upon such a conversion of the 2019 Notes, we would pay or deliver (as applicable) cash, shares of our common stock or a combination thereof, at our election. Upon such a conversion of the 2021 Notes, we would pay cash for the principal amount and, if applicable, deliver shares of our common stock (subject to our right to deliver cash in lieu of all or a portion of such shares of our common stock) based on a daily conversion value. If a fundamental change occurs prior to the applicable maturity date, holders of these notes may require us to repurchase all or a portion of their notes for cash at a repurchase price equal to 100% of the principal amount plus any accrued and unpaid interest. In addition, if specific corporate events occur prior to the applicable maturity date, we would increase the conversion rate for a holder who elects to convert their notes in connection with such an event in certain circumstances. As of December 31, 2019, none of the conditions permitting the holders of 2021 to early convert had been met. Therefore, the 2021 Notes are classified as long-term.

In accordance with GAAP relating to embedded conversion features, we initially valued and bifurcated the conversion features associated with these notes. We recorded to stockholders’ equity $188 million for the 2019 Notes’ conversion feature and $369 million for the 2021 Notes’ conversion feature. The resulting debt discounts are being amortized to interest expense at an effective interest rate of 4.89% and 5.96%, respectively.

In connection with the offering of these notes in March and April 2014, we entered into convertible note hedge transactions whereby we had the option to purchase 2.6 million shares of our common stock for the 2019 Notes and have the option to purchase initially (subject to adjustment for certain specified events) 3.8 million shares of our common stock for the 2021 Notes at a price of $359.87 per share. The total cost of the convertible note hedge transactions was $604 million. In addition, we sold warrants whereby the holders of the warrants had the option to purchase 2.6 million shares of our common stock at a price of $512.66 per share for the 2019 Notes and have the option to purchase initially (subject to adjustment for certain specified events) 3.8 million shares of our common stock at a price of $560.64 per share for the 2021 Notes. We received $389 million in total cash proceeds from the sales of these warrants. Taken together, the purchases of the convertible note hedges and the sales of the warrants are intended to reduce potential dilution and/or cash payments from the conversion of these notes and to effectively increase the overall conversion price from $359.87 to $512.66 per share for the 2019 Notes and from $359.87 to $560.64 per share for the 2021 Notes. As these transactions meet certain accounting criteria, the convertible note hedges and warrants are recorded in stockholders’ equity and are not accounted for as derivatives. The net cost incurred in connection with the convertible note hedge and warrant transactions was recorded as a reduction to additional paid-in capital on the consolidated balance sheet.

During the first quarter of 2019, we repaid the $920 million in aggregate principal amount of the 2019 Notes. As of December 31, 2019, the convertible note hedges and warrants associated with the 2019 Notes have expired.

As of December 31, 2019, the if-converted value of the 2021 Notes exceeds the outstanding principal amount by $224 million.

2022 Notes, Bond Hedges and Warrant Transactions

In March 2017, we issued $978 million in aggregate principal amount of 2.375% Convertible Senior Notes due in March 2022 in a public offering. The net proceeds from the issuance, after deducting transaction costs, were $966 million.

Each $1,000 of principal of the 2022 Notes is initially convertible into 3.0534 shares of our common stock, which is equivalent to an initial conversion price of $327.50 per share, subject to adjustment upon the occurrence of specified events. Holders of the 2022 Notes may convert, at their option, on or after December 15, 2021. Further, holders of the 2022 Notes may convert, at their option, prior to December 15, 2021 only under the following circumstances: (1) during any quarter beginning after June 30, 2017, if the closing price of our common stock for at least 20 trading days (whether or not consecutive) during the last 30 consecutive trading days immediately preceding the quarter is greater than or equal to 130% of the conversion price; (2) during the five-business day period following any five-consecutive trading day period in which the trading price of the 2022 Notes is less than 98% of the product of the closing price of our common stock and the applicable conversion rate for each day during such five-consecutive trading day period or (3) if we make specified distributions to holders of our common stock or if specified corporate transactions occur. Upon a conversion, we would pay cash for the principal amount and, if applicable, deliver shares of our common stock (subject to our right to deliver cash in lieu of all or a portion of such shares of our common stock) based on a daily conversion value. If a fundamental change occurs prior to the maturity date, holders of the 2022 Notes may require us to repurchase all or a portion of their 2022 Notes for cash at a repurchase price equal to 100% of the principal amount plus any accrued and unpaid interest. In addition, if specific corporate events occur prior to the maturity date, we would increase the conversion rate for a holder who elects to convert its 2022 Notes in connection with such an event in certain circumstances. As of December 31, 2019, none of the conditions permitting the holders of the 2022 Notes to early convert had been met. Therefore, the 2022 Notes are classified as long-term.

In accordance with GAAP relating to embedded conversion features, we initially valued and bifurcated the conversion feature associated with the 2022 Notes. We recorded to stockholders' equity $146 million for the conversion feature. The resulting debt discount is being amortized to interest expense at an effective interest rate of 6.00%.

In connection with the offering of the 2022 Notes, we entered into convertible note hedge transactions whereby we have the option to purchase initially (subject to adjustment for certain specified events) 3.0 million shares of our common stock at a price of $327.50 per share. The cost of the convertible note hedge transactions was $204 million. In addition, we sold warrants whereby the holders of the warrants have the option to purchase initially (subject to adjustment for certain specified events) 3.0 million shares of our common stock at a price of $655.00 per share. We received $53 million in cash proceeds from the sale of these warrants. Taken together, the purchase of the convertible note hedges and the sale of the warrants are intended to reduce potential dilution from the conversion of the 2022 Notes and to effectively increase the overall conversion price from $327.50 to $655.00 per share. As these transactions meet certain accounting criteria, the convertible note hedges and warrants are recorded in stockholders' equity and are not accounted for as derivatives. The net cost incurred in connection with the convertible note hedge and warrant transactions was recorded as a reduction to additional paid-in capital on the consolidated balance sheet.

As of December 31, 2019, the if-converted value of the notes exceeds the outstanding principal amount by $271 million.

2024 Notes, Bond Hedges and Warrant Transactions

In May 2019, we issued $1.84 billion in aggregate principal amount of 2.00% Convertible Senior Notes due in May 2024 in a public offering. The net proceeds from the issuance, after deducting transaction costs, were $1.82 billion.

Each $1,000 of principal of the 2024 Notes is initially convertible into 3.2276 shares of our common stock, which is equivalent to an initial conversion price of $309.83 per share, subject to adjustment upon the occurrence of specified events. Holders of the 2024 Notes may convert, at their option, on or after February 15, 2024. Further, holders of the 2024 Notes may convert, at their option, prior to February 15, 2024 only under the following circumstances: (1) during any calendar quarter commencing after September 30, 2019 (and only during such calendar quarter), if the last reported sale price of our common stock for at least 20 trading days (whether or not consecutive) during a period of 30 consecutive trading days ending on the last trading day of immediately preceding calendar quarter is greater than or equal to 130% of the conversion price on each trading day; (2) during the five-business day period after any five-consecutive trading day period in which the trading price per $1,000 principal amount of the 2024 Notes for each trading day of such period is less than 98% of the product of the last reported sale price of our common stock and the conversion rate on each such trading day, or (3) if specified corporate events occur. Upon conversion, the 2024 Notes will be settled in cash, shares of our common stock or a combination thereof, at our election. If a fundamental change occurs prior to the maturity date, holders of the 2024 Notes may require us to repurchase all or a portion of their 2024 Notes for cash at a repurchase price equal to 100% of the principal amount plus any accrued and unpaid interest. In addition, if specific corporate events occur prior to the maturity date, we would increase the conversion rate for a holder who elects to convert its 2024 Notes in connection with such an event in certain circumstances. As of December 31, 2019, none of the conditions permitting the holders of the 2024 Notes to early convert had been met. Therefore, the 2024 Notes are classified as long-term.

In accordance with GAAP relating to embedded conversion features, we initially valued and bifurcated the conversion feature associated with the 2024 Notes. We recorded to stockholders' equity $491 million for the conversion feature. The resulting debt discount is being amortized to interest expense at an effective interest rate of 8.68%.

In connection with the offering of the 2024 Notes, we entered into convertible note hedge transactions whereby we have the option to purchase initially (subject to adjustment for certain specified events) 5.9 million shares of our common stock at a price of $309.83 per share. The cost of the convertible note hedge transactions was $476 million. In addition, we sold warrants whereby the holders of the warrants have the option to purchase initially (subject to adjustment for certain specified events) 5.9 million shares of our common stock at a price of $607.50 per share. We received $174 million in cash proceeds from the sale of these warrants. Taken together, the purchase of the convertible note hedges and the sale of the warrants are intended to reduce potential dilution from the conversion of the 2024 Notes and to effectively increase the overall conversion price from $309.83 to $607.50 per share. As these transactions meet certain accounting criteria, the convertible note hedges and warrants are recorded in stockholders' equity and are not accounted for as derivatives. The net cost incurred in connection with the convertible note hedge and warrant transactions was recorded as a reduction to additional paid-in capital on the consolidated balance sheet.

As of December 31, 2019, the if-converted value of the notes exceeds the outstanding principal amount by $644 million.

2025 Notes

In August 2017, we issued $1.80 billion in aggregate principal amount of unsecured 5.30% Senior Notes due in August 2025 pursuant to Rule 144A and Regulation S under the Securities Act. The net proceeds from the issuance, after deducting transaction costs, were $1.77 billion.

Credit Agreement

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

In March 2019, we amended and restated the Credit Agreement to increase the total lender commitments by $500 million to $2.425 billion and extend the term of substantially all of the total commitments to July 2023.

1.625% Convertible Senior Notes due in 2019

In 2014, SolarCity issued $566 million in aggregate principal amount of 1.625% Convertible Senior Notes due on November 1, 2019 in a private placement.

Each $1,000 of principal of the convertible senior notes was convertible into 1.3169 shares of our common stock, which is equivalent to a conversion price of $759.36 per share (subject to adjustment upon the occurrence of specified events related to dividends, tender offers or exchange offers). The maximum conversion rate was capped at 1.7449 shares for each $1,000 of principal of the convertible senior notes, which is equivalent to a minimum conversion price of $573.10 per share. The convertible senior notes did not have a cash conversion option and the convertible senior note holders could require us to repurchase their convertible senior notes for cash only under certain defined fundamental changes.

In November 2019, we fully repaid $566 million in aggregate principal amount of the Notes.

Zero-Coupon Convertible Senior Notes due in 2020

In December 2015, SolarCity issued $113 million in aggregate principal amount of Zero-Coupon Convertible Senior Notes due on December 1, 2020 in a private placement. $13 million of the convertible senior notes were issued to related parties (see Note 20, *Related Party Transactions*).

Each $1,000 of principal of the convertible senior notes is now convertible into 3.3333 shares of our common stock, which is equivalent to a conversion price of $300.00 per share (subject to adjustment upon the occurrence of specified events related to dividends, tender offers or exchange offers). The maximum conversion rate is capped at 4.2308 shares for each $1,000 of principal of the convertible senior notes, which is equivalent to a minimum conversion price of $236.36 per share. The convertible senior notes do not have a cash conversion option. The convertible senior note holders may require us to repurchase their convertible senior notes for cash only under certain defined fundamental changes. On or after June 30, 2017, the convertible senior notes are redeemable by us in the event that the closing price of our common stock exceeds 200% of the conversion price for 45 consecutive trading days ending within three trading days of such redemption notice at a redemption price equal to 100% of the principal amount plus any accrued and unpaid interest.

As of December 31, 2019, the if-converted value of the notes exceeds the outstanding principal amount by $41 million.

Solar Bonds and other Loans

Solar Bonds are senior unsecured obligations that are structurally subordinate to the indebtedness and other liabilities of our subsidiaries. Solar Bonds were issued under multiple series with various terms and interest rates. Additionally, we have assumed the 5.50% Convertible Senior Notes due in 2022 issued by Maxwell, which are convertible into shares of our common stock as a result of our acquisition of Maxwell.

Automotive Asset-backed Notes

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

In November 2019, we issued $861 million in aggregate principal amount of Automotive Asset-backed Notes. The proceeds from the issuance, net of discounts and fees, were $857 million.

Solar Asset-backed Notes

From time to time, our subsidiaries pool and transfer either qualifying solar energy systems and the associated customer contracts or our interests in certain financing funds into Special Purpose Entities ("SPEs") and issue Solar Asset-backed Notes backed by these solar assets or interests to investors. The SPEs are wholly owned by us and are consolidated in the financial statements. The cash flows generated by these solar assets or distributed by the underlying financing funds to certain SPEs are used to service the principal and interest payments on the Solar Asset-backed Notes and satisfy the SPEs' expenses, and any remaining cash is distributed to us. We recognize revenue earned from the associated customer contracts in accordance with our revenue recognition policy. The SPEs' assets and cash flows are not available to our other creditors, and the creditors of the SPEs, including the Solar Asset-backed Note holders, have no recourse to our other assets. We contracted with the SPEs to provide operations & maintenance and administrative services for the solar energy systems. As of December 31, 2019, solar assets pledged as collateral for Solar Asset-backed Notes had a carrying value of $690 million and are included within solar energy systems, net, on the consolidated balance sheets.

China Loan Agreements

In March 2019, one of our subsidiaries entered into a loan agreement with a syndicate of lenders in China for a bridge loan to be used for expenditures related to the construction of and production at our Gigafactory Shanghai. The loan agreement was terminated in December 2019.

In September 2019, one of our subsidiaries entered into a loan agreement with a lender in China for an unsecured 12-month revolving facility of up to RMB 5.0 billion (or the equivalent drawn in U.S. dollars), to finance vehicles in-transit to China. Borrowed funds bear interest at an annual rate no greater than 90% of the one-year rate published by the People's Bank of China. The loan facility is non-recourse to our assets.

In December 2019, one of our subsidiaries entered into loan agreements with a syndicate of lenders in China for: (i) a secured term loan facility of up to RMB 9.0 billion or the equivalent amount drawn in U.S. dollars (the "Fixed Asset Facility") and (ii) an unsecured revolving loan facility of up to RMB 2.25 billion or the equivalent amount drawn in U.S. dollars (the "Working Capital Facility"), in each case to be used in connection with our construction of and production at our Gigafactory Shanghai. Outstanding borrowings pursuant to the Fixed Asset Facility accrue interest at a rate equal to: (i) for RMB-denominated loans, the market quoted interest rate published by the People's Bank of China minus 0.7625%, and (ii) for U.S. dollar-denominated loans, the sum of one-year LIBOR plus 1.3%. Outstanding borrowings pursuant to the Working Capital Facility accrue interest at a rate equal to: (i) for RMB-denominated loans, the market quoted interest rate published by the People's Bank of China minus 0.4525%, and (ii) for U.S. dollar-denominated loans, the sum of one-year LIBOR plus 0.8%. The Fixed Asset Facility is secured by the land and buildings at Gigafactory Shanghai and both facilities are non-recourse to our other assets.

Cash Equity Debt

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

Solar Loan-backed Notes

In January 2016 and January 2017, our subsidiaries pooled and transferred certain MyPower customer notes receivable into two SPEs and issued $330 million in aggregate principal amount of Solar Loan-backed Notes, backed by these notes receivable to investors. Accordingly, we did not recognize a gain or loss on the transfer of these notes receivable. The SPEs are wholly owned by us and are consolidated in the financial statements. The payments received by the SPEs from these notes receivable are used to service the semi-annual principal and interest payments on the Solar Loan-backed Notes and satisfy the SPEs' expenses, and any remaining cash is distributed to us. The SPEs' assets and cash flows are not available to our other creditors, and the creditors of the SPEs, including the Solar Loan-backed Note holders, have no recourse to our other assets.

Warehouse Agreements

In August 2016, our subsidiaries entered into a loan and security agreement (the "2016 Warehouse Agreement") for borrowings secured by the future cash flows arising from certain leases and the associated leased vehicles. On August 17, 2017, the 2016 Warehouse Agreement was amended to modify the interest rates and extend the availability period and the maturity date, and our subsidiaries entered into another loan and security agreement (the "2017 Warehouse Agreement") with substantially the same terms as and that shares the same committed amount with the 2016 Warehouse Agreement. On August 16, 2018, the 2016 Warehouse Agreement and 2017 Warehouse Agreement were amended to extend the availability period from August 17, 2018 to August 16, 2019 and extend the maturity date from September 2019 to September 2020. On December 28, 2018, our subsidiaries terminated the 2017 Warehouse Agreement after having fully repaid all obligations thereunder, and entered into a third loan and security agreement with substantially the same terms as and that shares the same committed amount with the 2016 Warehouse Agreement. We refer to these agreements together as the "Warehouse Agreements." Amounts drawn under the Warehouse Agreements generally bear interest at a fixed margin above (i) LIBOR or (ii) the commercial paper rate. The Warehouse Agreements are non-recourse to our other assets.

Pursuant to the Warehouse Agreements, an undivided beneficial interest in the future cash flows arising from certain leases and the related leased vehicles has been sold for legal purposes but continues to be reported in the consolidated financial statements. The interest in the future cash flows arising from these leases and the related vehicles is not available to pay the claims of our creditors other than pursuant to obligations to the lenders under the Warehouse Agreements. Any excess cash flows not required to pay obligations under the Warehouse Agreements are available for distributions.

In August 2019, our subsidiaries amended the Warehouse Agreements to extend the availability period from August 16, 2019 to August 14, 2020 and extend the maturity date from September 2020 to September 2021.

In November 2019, we repaid $723 million of the principal outstanding under the Warehouse Agreements.

Solar Term Loans

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

During the fourth quarter of 2019, we fully repaid the $159 million in aggregate principal of one term loan.

Canada Credit Facility

In December 2016, one of our subsidiaries entered into a credit agreement (the "Canada Credit Facility") with a bank for borrowings secured by our interests in certain vehicle leases. In December 2017 and December 2018, the Canada Credit Facility was amended to add our interests in additional vehicle leases as collateral, allowing us to draw additional funds. Amounts drawn under the Canada Credit Facility bear interest at fixed rates. The Canada Credit Facility is non-recourse to our other assets.

Solar Renewable Energy Credit and other Loans

We have entered into various solar renewable energy credit and other loan agreements with various financial institutions, including a solar revolving credit facility. The solar renewable energy credit loan facility is secured by substantially all of the assets of one of our wholly owned subsidiaries, including its rights under forward contracts to sell SRECs, and is non-recourse to our other assets. The solar revolving credit facility is secured by certain assets of the subsidiary and is non-recourse to our other assets.

Interest Expense

The following table presents the interest expense related to the contractual interest coupon, the amortization of debt issuance costs and the amortization of debt discounts on our convertible senior notes with cash conversion features, which include the 1.50% Convertible Senior Notes due in 2018, the 2019 Notes, the 2021 Notes, the 2022 Notes and the 2024 Notes (in millions):

	Year Ended December 31,		
	2019	2018	2017
Contractual interest coupon	$ 65	$ 43	$ 39
Amortization of debt issuance costs	7	7	7
Amortization of debt discounts	148	123	114
Total	$ 220	$ 173	$ 160

Pledged Assets

As of December 31, 2019 and 2018, we had pledged or restricted $5.72 billion and $5.23 billion of our assets (consisted principally of restricted cash, receivables, inventory, SRECs, solar energy systems, operating lease vehicles, land use rights, property and equipment, and equity interests in certain SPEs) as collateral for our outstanding debt.

Schedule of Principal Maturities of Debt

The future scheduled principal maturities of debt as of December 31, 2019 were as follows (in millions):

	Recourse debt	Non-recourse debt	Total
2020	$ 259	$ 1,155	$ 1,414
2021	1,382	909	2,291
2022	1,024	1,013	2,037
2023	1,586	199	1,785
2024	1,840	558	2,398
Thereafter	1,807	760	2,567
Total	$ 7,898	$ 4,594	$ 12,492

Note 13 – 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 calculate the present value of future lease payments based on the index or rate at the lease commencement date for new leases commencing after January 1, 2019. For historical leases, we used the index or rate as of the adoption date. Differences between the calculated 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 millions) within our consolidated balance sheet:

		December 31, 2019
Operating leases:		
Operating lease right-of-use assets	$	1,218
Accrued liabilities and other	$	228
Other long-term liabilities		956
Total operating lease liabilities	$	1,184
Finance leases:		
Solar energy systems, net	$	30
Property, plant and equipment, net		1,600
Total finance lease assets	$	1,630
Current portion of long-term debt and finance leases	$	386
Long-term debt and finance leases, net of current portion		1,232
Total finance lease liabilities	$	1,618

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

		Year Ended December 31, 2019
Operating lease expense:		
Operating lease expense (1)	$	426
Finance lease expense:		
Amortization of leased assets	$	299
Interest on lease liabilities		104
Total finance lease expense	$	403
Total lease expense	$	829

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

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

	December 31, 2019
Weighted-average remaining lease term:	
Operating leases	6.2 years
Finance leases	3.9 years
Weighted-average discount rate:	
Operating leases	6.5%
Finance leases	6.5%

Because most of our leases do not provide an implicit rate of return, we used our incremental borrowing rate based on the information available at lease commencement date in determining the present value of lease payments.

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

	Year Ended December 31, 2019
Cash paid for amounts included in the measurement of lease liabilities:	
Operating cash outflows from operating leases	$ 396
Operating cash outflows from finance leases (interest payments)	$ 104
Financing cash outflows from finance leases	$ 321
Leased assets obtained in exchange for finance lease liabilities	$ 616
Leased assets obtained in exchange for operating lease liabilities	$ 202

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

	Operating Leases	Finance Leases
2020	$ 296	$ 474
2021	262	478
2022	210	600
2023	174	224
2024	146	5
Thereafter	372	13
Total minimum lease payments	1,460	1,794
Less: Interest	276	176
Present value of lease obligations	1,184	1,618
Less: Current portion	228	386
Long-term portion of lease obligations	$ 956	$ 1,232

Under legacy lease accounting (ASC 840), future minimum lease payments under non-cancellable leases as of December 31, 2018 are as follows (in millions):

	Operating Leases	Finance Leases
2019	$ 276	$ 417
2020	257	503
2021	230	506
2022	183	24
2023	158	5
Thereafter	524	6
Total minimum lease payments	$ 1,628	1,461
Less: Interest		122
Present value of lease obligations		1,339
Less: Current portion		346
Long-term portion of lease obligations		$ 993

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*. Following the adoption of the new lease standard, solar energy system leases and PPAs that commenced after January 1, 2019, where we are the lessor and were previously accounted for as leases, no longer meet the definition of a lease and are therefore not included in the table as of December 31, 2019 (refer to Note 2, *Summary of Significant Accounting Policies*). As of December 31, 2019, maturities of our operating lease receivables from customers for each of the next five years and thereafter were as follows (in millions):

2020	$	644
2021		494
2022		317
2023		190
2024		191
Thereafter		2,294
Total	$	4,130

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 millions):

2019	$	502
2020		418
2021		271
2022		187
2023		189
Thereafter		2,469
Total	$	4,036

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.

Note 14 – Equity Incentive Plans

In June 2019, we adopted the 2019 Equity Incentive Plan (the "2019 Plan"), and simultaneously terminated the 2010 Equity Incentive Plan (the "2010 Plan"). No new awards have been granted under the 2010 Plan following the adoption of the 2019 Plan, but such termination did not affect outstanding awards under the 2010 Plan. The 2019 Plan has similar terms as the 2010 Plan and provides for the granting of stock options, restricted stock, RSUs, stock appreciation rights, performance units and performance shares to our employees, directors and consultants. Stock options granted under the 2019 Plan may be either incentive stock options or nonstatutory stock options. Incentive stock options may only be granted to our employees. Nonstatutory stock options may be granted to our employees, directors and consultants. Generally, our stock options and RSUs vest over four years and our stock options are exercisable over a maximum period of 10 years from their grant dates. Vesting typically terminates when the employment or consulting relationship ends.

As of December 31, 2019, 11 million shares were reserved and available for issuance under the 2019 Plan.

The following table summarizes our stock option and RSU activity:

	Stock Options				RSUs	
	Number of Options (in thousands)	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Life (years)	Aggregate Intrinsic Value (in billions)	Number of RSUs (in thousands)	Weighted-Average Grant Date Fair Value
Balance, December 31, 2018	31,208	$ 273.40			4,659	$ 294.63
Granted	1,473	$ 265.26			3,752	$ 282.74
Exercised or released	(1,441)	$ 106.68			(1,949)	$ 277.13
Cancelled	(1,245)	$ 310.57			(1,656)	$ 295.05
Balance, December 31, 2019	29,995	$ 279.49	6.89	$ 4.17	4,806	$ 291.06
Vested and expected to vest, December 31, 2019	15,860	$ 228.29	6.05	$ 3.02	4,804	$ 291.05
Exercisable and vested, December 31, 2019	7,025	$ 94.07	3.39	$ 2.28		

The weighted-average grant date fair value of RSUs in the years ended December 31, 2019, 2018, and 2017 was $282.74, $316.46 and $308.71, respectively. The aggregate release date fair value of RSUs in the years ended December 31, 2019, 2018 and 2017 was $502 million, $546 million and $491 million, respectively.

The aggregate intrinsic value of options exercised in the years ended December 31, 2019, 2018, and 2017 was $237 million, $293 million and $544 million, respectively.

Fair Value Assumptions

We use the fair value method in recognizing stock-based compensation expense. Under the fair value method, we estimate the fair value of each stock option award with service or service and performance conditions and the ESPP on the grant date generally using the Black-Scholes option pricing model and the weighted-average assumptions in the following table:

	Year Ended December 31,		
	2019	2018	2017
Risk-free interest rate:			
Stock options	2.4%	2.5%	1.8%
ESPP	2.2%	2.0%	1.1%
Expected term (in years):			
Stock options	4.5	4.7	5.1
ESPP	0.5	0.5	0.5
Expected volatility:			
Stock options	48%	42%	42%
ESPP	53%	43%	35%
Dividend yield:			
Stock options	0.0%	0.0%	0.0%
ESPP	0.0%	0.0%	0.0%
Grant date fair value per share:			
Stock options	$ 111.59	$ 121.92	$ 122.25
ESPP	$ 78.25	$ 84.37	$ 75.05

The fair value of RSUs with service or service and performance conditions is measured on the grant date based on the closing fair market value of our common stock. The risk-free interest rate is based on the U.S. Treasury yield for zero-coupon U.S. Treasury notes with maturities approximating each grant's expected life. Prior to the fourth quarter of 2017, given our then limited history with employee grants, we used the "simplified" method in estimating the expected term of our employee grants; the simplified method utilizes the average of the time-to-vesting and the contractual life of the employee grant. Beginning with the fourth quarter of 2017, we use our historical data in estimating the expected term of our employee grants. The expected volatility is based on the average of the implied volatility of publicly traded options for our common stock and the historical volatility of our common stock.

2018 CEO Performance Award

In March 2018, our stockholders approved the Board of Directors' grant of 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 December 31, 2019, two operational milestones have been achieved: (i) $20.0 billion total annualized revenue and (ii) $1.5 billion annualized adjusted EBITDA, each 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 December 31, 2019, the following operational milestones were considered probable of achievement:

- Adjusted EBITDA of $3.0 billion
- Total revenue of $35.0 billion

Stock-based compensation expense associated with each tranche under the 2018 CEO Performance Award is recognized over the longer of (i) the expected achievement period for the operational milestone for such tranche and (ii) the expected achievement period for the related market capitalization milestone determined on the grant date, beginning at the point in time when the relevant operational milestone is considered probable of being met. If such operational milestone becomes probable any time after the grant date, we will recognize a cumulative catch-up expense from the grant date to that point in time. If the related market capitalization milestone is achieved earlier than its expected achievement period and the achievement of the related operational milestone, then the stock-based compensation expense will be recognized over the expected achievement period for the operational milestone, which may accelerate the rate at which such expense is recognized.

The 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. No tranches of the 2018 CEO Performance Award will vest unless a market capitalization and a matching operational milestone are both achieved. The first tranche of the 2018 CEO Performance Award will not vest unless our market capitalization were to approximately double from the initial level at the time the award was approved, based on both a six calendar month trailing average and a 30 calendar day trailing average (counting only trading days). Upon vesting of a tranche, all unamortized expense for the tranche will be recognized immediately. 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 December 31, 2019, we had $527 million of total unrecognized stock-based compensation expense for the operational milestones that were considered probable of achievement, which will be recognized over a weighted-average period of 2.72 years. As of December 31, 2019, we had unrecognized stock-based compensation expense of $1.29 billion for the operational milestones that were considered not probable of achievement. For the year ended December 31, 2019, we recorded stock-based compensation expense of $296 million related to the 2018 CEO Performance Award. From March 21, 2018, when the grant was approved by our stockholders, through December 31, 2018, we recorded stock-based compensation expense of $175 million related to this award. The increase in stock-based compensation expense was primarily related to a $72 million cumulative catch-up expense for the service provided from the grant date when an additional operational milestone was considered probable of being met in the fourth quarter of 2019 and a shorter expense period in the prior year.

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 December 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 December 31, 2019, we had unrecognized stock-based compensation expense of $5 million for the performance milestone that was considered not probable of achievement. For the years ended December 31, 2019 and 2018, we did not record any additional stock-based compensation related to these awards. For the year ended December 2017, we recorded stock-based compensation expense of $7 million 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 December 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 December 31, 2019, we had unrecognized stock-based compensation expense of $6 million for the performance milestone that was considered not probable of achievement. For the year ended December 31, 2019, we recorded no stock-based compensation expense related to the 2012 CEO Performance Award. For the year ended December 31, 2018, the stock-based compensation we recorded related to this award was immaterial. For the year ended December 31, 2017, we recorded stock-based compensation expense of $5 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 his salary. Commencing in May 2019 at our CEO’s request, we eliminated altogether the earning and accrual of his base 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 millions):

	Year Ended December 31,		
	2019	2018	2017
Cost of revenues	$ 128	$ 109	$ 64
Research and development	285	261	218
Selling, general and administrative	482	375	185
Restructuring and other	3	4	—
Total	$ 898	$ 749	$ 467

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 December 31, 2019, we had $1.57 billion of total unrecognized stock-based compensation expense related to non-performance awards, which will be recognized over a weighted-average period of 2.91 years.

ESPP

Our employees are eligible to purchase our common stock through payroll deductions of up to 15% of their eligible compensation, subject to any plan limitations. The purchase price would be 85% of the lower of the fair market value on the first and last trading days of each six-month offering period. During the years ended December 31, 2019, 2018 and 2017, we issued 0.5 million, 0.4 million and 0.4 million shares under the ESPP with an associated expense of $40 million, $109 million and $71 million, respectively. There were 7 million shares available for issuance under the ESPP as of December 31, 2019.

Note 15 – Income Taxes

A provision for income taxes of $110 million, $58 million and $32 million has been recognized for the years ended December 31, 2019, 2018 and 2017, respectively, related primarily to our subsidiaries located outside of the U.S. Our loss before provision for income taxes for the years ended December 31, 2019, 2018 and 2017 was as follows (in millions):

	Year Ended December 31,		
	2019	2018	2017
Domestic	$ 287	$ 412	$ 993
Noncontrolling interest and redeemable noncontrolling interest	(87)	87	279
Foreign	465	506	937
Loss before income taxes	$ 665	$ 1,005	$ 2,209

The components of the provision for income taxes for the years ended December 31, 2019, 2018 and 2017 consisted of the following (in millions):

	Year Ended December 31,		
	2019	2018	2017
Current:			
Federal	$ —	$ (1)	$ (10)
State	5	3	2
Foreign	86	24	43
Total current	91	26	35
Deferred:			
Federal	(4)	—	—
State	—	—	—
Foreign	23	32	(3)
Total deferred	19	32	(3)
Total provision for income taxes	$ 110	$ 58	$ 32

On December 22, 2017, the 2017 Tax Cuts and Jobs Act ("Tax Act") was enacted into law making significant changes to the Internal Revenue Code. Changes include, but are not limited to, a federal corporate tax rate decrease from 35% to 21% for tax years beginning after December 31, 2017, the transition of U.S. international taxation from a worldwide tax system to a territorial system and a one-time transition tax on the mandatory deemed repatriation of foreign earnings. We were required to recognize the effect of the tax law changes in the period of enactment, such as re-measuring our U.S. deferred tax assets and liabilities as well as reassessing the net realizability of our deferred tax assets and liabilities. The Tax Act did not give rise to any material impact on the consolidated balance sheets and consolidated statements of operations due to our historical worldwide loss position and the full valuation allowance on our net U.S. deferred tax assets.

Deferred tax assets (liabilities) as of December 31, 2019 and 2018 consisted of the following (in millions):

	December 31, 2019	December 31, 2018
Deferred tax assets:		
Net operating loss carry-forwards	$ 1,846	$ 1,760
Research and development credits	486	377
Other tax credits	126	128
Deferred revenue	301	156
Inventory and warranty reserves	243	165
Stock-based compensation	102	102
Operating lease right-of-use liabilities	290	—
Accruals and others	16	28
Total deferred tax assets	3,410	2,716
Valuation allowance	(1,956)	(1,806)
Deferred tax assets, net of valuation allowance	1,454	910
Deferred tax liabilities:		
Depreciation and amortization	(1,185)	(861)
Investment in certain financing funds	(17)	(33)
Operating lease right-of-use assets	(263)	—
Other	(24)	(24)
Total deferred tax liabilities	(1,489)	(918)
Deferred tax liabilities, net of valuation allowance and deferred tax assets	$ (35)	$ (8)

As of December 31, 2019, we recorded a valuation allowance of $1.96 billion for the portion of the deferred tax asset that we do not expect to be realized. The valuation allowance on our net deferred taxes increased by $150 million, decreased by $38 million, and increased by $821 million during the years ended December 31, 2019, 2018 and 2017, respectively. The changes in valuation allowance are primarily due to additional U.S. deferred tax assets and liabilities incurred in the respective year. We have net $151 million of deferred tax assets in foreign jurisdictions, which management believes are more-likely-than-not to be fully realized given the expectation of future earnings in these jurisdictions. We continue to monitor the realizability of the U.S. deferred tax assets taking into account multiple factors, including the results of operations and magnitude of excess tax deductions for stock-based compensation. We intend to continue maintaining a full valuation allowance on our U.S. deferred tax assets until there is sufficient evidence to support the reversal of all or some portion of these allowances. Release of all, or a portion, of the valuation allowance would result in the recognition of certain deferred tax assets and a decrease to income tax expense for the period the release is recorded.

The reconciliation of taxes at the federal statutory rate to our provision for income taxes for the years ended December 31, 2019, 2018 and 2017 was as follows (in millions):

	Year Ended December 31,		
	2019	2018	2017
Tax at statutory federal rate	$ (139)	$ (211)	$ (773)
State tax, net of federal benefit	5	3	2
Nondeductible expenses	94	65	30
Excess tax benefits related to stock based compensation (1)	(7)	(44)	(1,013)
Foreign income rate differential	189	161	365
U.S. tax credits	(107)	(80)	(110)
Noncontrolling interests and redeemable noncontrolling interests adjustment	(29)	32	66
Effect of U.S. tax law change	—	—	723
Bargain in purchase gain	—	—	20
Convertible debt	(4)	—	—
Unrecognized tax benefits	17	1	3
Change in valuation allowance	91	131	719
Provision for income taxes	$ 110	$ 58	$ 32

(1) As of January 1, 2017, upon the adoption of ASU No. 2016-09, Improvements to Employee Share-based Payment Accounting, excess tax benefits from share-based award activity incurred from the prior and current years are reflected as a reduction of the provision for income taxes. The excess tax benefits result in an increase to our gross U.S. deferred tax assets that is offset by a corresponding increase to our valuation allowance.

As of December 31, 2019, we had $7.51 billion of federal and $6.16 billion of state net operating loss carry-forwards available to offset future taxable income, which will not begin to significantly expire until 2024 for federal and 2028 for state purposes. A portion of these losses were generated by SolarCity prior to our acquisition in 2016 and, therefore, are subject to change of control provisions, which limit the amount of acquired tax attributes that can be utilized in a given tax year. We do not expect these change of control limitations to significantly impact our ability to utilize these attributes.

As of December 31, 2019, we had research and development tax credits of $320 million and $284 million for federal and state income tax purposes, respectively. If not utilized, the federal research and development tax credits will expire in various amounts beginning in 2024. However, the state research and development tax credits can be carried forward indefinitely. In addition, we have other general business tax credits of $125 million for federal income tax purposes, which will not begin to significantly expire until 2033.

No deferred tax liabilities for foreign withholding taxes have been recorded relating to the earnings of our foreign subsidiaries since all such earnings are intended to be indefinitely reinvested. The amount of the unrecognized deferred tax liability associated with these earnings is immaterial.

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

Uncertain Tax Positions

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

December 31, 2016	$ 204
Decreases in balances related to prior year tax positions	(31)
Increases in balances related to current year tax positions	84
Changes in balances related to effect of U.S. tax law change	(58)
December 31, 2017	199
Decreases in balances related to prior year tax positions	(6)
Increases in balances related to current year tax positions	60
December 31, 2018	253
Decreases in balances related to prior year tax positions	(39)
Increases in balances related to current year tax positions	59
December 31, 2019	$ 273

As of December 31, 2019, accrued interest and penalties related to unrecognized tax benefits are classified as income tax expense and were immaterial. Unrecognized tax benefits of $247 million, if recognized, would not affect our effective tax rate since the tax benefits would increase a deferred tax asset that is currently fully offset by a full valuation allowance.

We file income tax returns in the U.S., California and various state and foreign jurisdictions. We are currently under examination by the IRS for the years 2015 and 2016. Additional tax years within the period 2004 to 2018 remain subject to examination for federal income tax purposes, and tax years 2004 to 2018 remain subject to examination for California income tax purposes. All net operating losses and tax credits generated to date are subject to adjustment for U.S. federal and California income tax purposes. Tax years 2008 to 2018 remain subject to examination in other U.S. state and foreign jurisdictions.

The potential outcome of the current examination could result in a change to unrecognized tax benefits within the next twelve months. However, we cannot reasonably estimate possible adjustments at this time.

The U.S. Tax Court issued a decision in *Altera Corp v. Commissioner* related to the treatment of stock-based compensation expense in a cost-sharing arrangement. On June 7, 2019, the Court reversed the Tax Court decision and upheld the validity of Treas. Reg. Section 1.482-7A(d)(2), requiring stock-based compensation costs be included in the costs shared under a cost sharing agreement. Given that the current active decision can still be appealed because Altera has the option to petition up to the Supreme Court, Tesla's position is to continue to include stock-based compensation in cost sharing allocation agreement. If and when the current tax court's decision is overturned, we will treat the amount previously shared as a pre-payment to future cost sharing agreement costs. Because we have a full valuation allowance in the U.S., any potential tax benefits would increase our U.S. deferred tax asset and would not have a material impact to our financials.

Note 16 – Commitments and Contingencies

Operating Lease Arrangement in Buffalo, New York

We have an operating lease through the Research Foundation for the State University of New York (the “SUNY Foundation”) for a manufacturing facility constructed on behalf of the SUNY Foundation and which was substantially completed in April 2018. We use this facility, referred to as Gigafactory New York, primarily for the development and production of our Solar Roof and other solar products and components, energy storage components, and Supercharger components, and for other lessor-approved functions. Under the lease and a related research and development agreement, on behalf of the SUNY Foundation, we have and will continue to install certain utilities and other improvements and acquire certain equipment designated by us to be used in the manufacturing facility. The SUNY Foundation covered (i) construction costs related to the manufacturing facility up to $350 million, (ii) the acquisition and commissioning of the manufacturing equipment in an amount up to $275 million and (iii) $125 million for additional specified scope costs, in cases (i) and (ii) only, subject to the maximum funding allocation from the State of New York; and we were responsible for any construction or equipment costs in excess of such amounts. The SUNY Foundation owns the manufacturing facility and the manufacturing equipment purchased by the SUNY Foundation. Following completion of the manufacturing facility, we have commenced leasing of the manufacturing facility and the manufacturing equipment owned by the SUNY Foundation for an initial period of 10 years, with an option to renew, for $2.00 per year plus utilities. 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 New York in our consolidated financial statements.

Under the terms of the operating lease arrangement, we are required to achieve specific operational milestones during the initial lease term; which include employing a certain number of employees at the manufacturing facility, within western New York and within the State of New York within specified periods following the completion of the manufacturing facility. We are also required to spend or incur $5.00 billion in combined capital, operational expenses and other costs in the State of New York within 10 years following the achievement of full production. On an annual basis during the initial lease term, as measured on each anniversary of the commissioning of the manufacturing facility, if we fail to meet these specified investment and job creation requirements, then we would be obligated to pay a $41 million “program payment” to the SUNY Foundation for each year that we fail to meet these requirements. Furthermore, if the arrangement is terminated due to a material breach by us, then additional amounts might become payable by us. As of December 31, 2019, we have met the targets as of the applicable measurement dates and anticipate meeting the remaining obligations through our operations at this facility and other operations within the State of New York.

Operating Lease Arrangement in Shanghai, China

We have an operating lease arrangement for an initial term of 50 years with the local government of Shanghai for land use rights where we are constructing Gigafactory Shanghai. Under the terms of the arrangement, we are required to spend RMB 14.08 billion in capital expenditures, and to generate RMB 2.23 billion of annual tax revenues starting at the end of 2023. If we are unwilling or unable to meet such target or obtain periodic project approvals, in accordance with the Chinese government’s standard terms for such arrangements, we would be required to revert the site to the local government and receive compensation for the remaining value of the land lease, buildings and fixtures. We believe the capital expenditure requirement and the tax revenue target will be attainable even if our actual vehicle production was far lower than the volumes we are forecasting.

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, and mediations were held on June 10, 2019. Plaintiffs and defendants filed respective motions for summary judgment on August 25, 2019, and further mediations were held on October 3, 2019. The Court held a hearing on the motions for summary judgment on November 4, 2019. On January 22, 2020, all of the director defendants except Elon Musk reached a tentative settlement to resolve the lawsuit against them for an amount that would be paid entirely under the applicable insurance policy. The settlement does not involve an admission of any wrongdoing by any party. Tesla will receive such amount, which would be recognized as a gain in its financial statements, if the settlement is finally approved by the Court. On February 4, 2020, the Court issued a ruling that denied plaintiffs' previously-filed motion and granted in part and denied in part defendants' previously-filed motion. Fact and expert discovery is complete, and the case is set for trial in March 2020.

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 and on July 17, 2019 filed their opening brief. We filed our opposition on September 16, 2019. 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 case. On February 5, 2019, the Court stayed this new case pending a ruling on the motion to dismiss the complaint in such earlier filed federal case. After such earlier filed federal case was dismissed, defendants filed a motion on July 2, 2019 to dismiss this case as well. This case is now stayed pending a ruling from the appellate court on such earlier filed federal case with an agreement that if defendants prevail on appeal in such case, this case will be dismissed. 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 Elon Musk and the members of Tesla's board of directors as then constituted, alleging corporate waste, unjust enrichment and that such board members breached their fiduciary duties by approving the stock-based compensation plan. The complaint seeks, among other things, monetary damages and rescission or reformation of the stock-based compensation plan. On August 31, 2018, defendants filed a motion to dismiss the complaint; plaintiff filed its opposition brief on November 1, 2018 and defendants filed a reply brief on December 13, 2018. The hearing on the motion to dismiss was held on May 9, 2019. On September 20, 2019, the Court granted the motion to dismiss as to the corporate waste claim but denied the motion as to the breach of fiduciary duty and unjust enrichment claims. Our answer was filed on December 3, 2019, and trial is set for June 2021. 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 was stayed while the issue of selection of lead counsel was briefed and argued before the U.S. Court of Appeals for the Ninth Circuit. The Ninth Circuit ruled regarding lead counsel. Defendants filed a motion to dismiss the complaint on November 22, 2019. The hearing on the motion is set for March 6, 2020. 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, the settlement was amended to modify certain of the previously-agreed disclosure procedures to clarify the application of such procedures, which was subsequently approved by the Court. All other terms of the prior settlement were 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 had issued subpoenas to Tesla in connection with (a) Elon 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 take-private investigation was resolved and closed with the settlement with the SEC described above. On December 4, 2019, the SEC (i) closed the investigation into the projections and other public statements regarding Model 3 production rates and (ii) issued a subpoena seeking information concerning certain financial data and contracts including Tesla's regular financing arrangements. Separately, the DOJ had also asked us to voluntarily provide it with information about the above matters related to taking Tesla private and Model 3 production rates.

Aside from the settlement, as amended, with the SEC 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 investment tax credits (“ITC”s). 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 December 31, 2019, we had $282 million of unused letters of credit outstanding.

Note 17 – 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 millions):

	December 31, 2019	December 31, 2018
Assets		
Current assets		
Cash and cash equivalents	$ 106	$ 75
Restricted cash	90	131
Accounts receivable, net	27	19
Prepaid expenses and other current assets	10	10
Total current assets	233	235
Operating lease vehicles, net	1,183	155
Solar energy systems, net	5,030	5,117
Restricted cash, net of current portion	69	65
Other assets	87	56
Total assets	$ 6,602	$ 5,628
Liabilities		
Current liabilities		
Accrued liabilities and other	80	133
Deferred revenue	78	21
Customer deposits	9	—
Current portion of long-term debt and finance leases	608	663
Total current liabilities	775	817
Deferred revenue, net of current portion	264	178
Long-term debt and finance leases, net of current portion	1,516	1,238
Other long-term liabilities	22	26
Total liabilities	$ 2,577	$ 2,259

Note 18 – Lease Pass-Through Financing Obligation

Through December 31, 2019, we had entered into eight transactions referred to as "lease pass-through fund arrangements". Under these arrangements, our wholly owned subsidiaries finance the cost of solar energy systems with investors through arrangements contractually structured as master leases for an initial term ranging between 10 and 25 years. These solar energy systems are subject to lease or PPAs with customers with an initial term not exceeding 25 years. These solar energy systems are included within solar energy systems, net on the consolidated balance sheets.

The cost of the solar energy systems under lease pass-through fund arrangements as of December 31, 2019 and 2018 was $1.05 billion. The accumulated depreciation on these assets as of December 31, 2019 and 2018 was $101 million and $66 million, respectively. The total lease pass-through financing obligation as of December 31, 2019 was $94 million, of which $57 million is classified as a current liability. The total lease pass-through financing obligation as of December 31, 2018 was $112 million, of which $62 million was classified as a current liability. Lease pass-through financing obligation is included in accrued liabilities and other for the current portion and other long-term liabilities for the long-term portion on the consolidated balance sheets.

Under a lease pass-through fund arrangement, the investor makes a large upfront payment to the lessor, which is one of our subsidiaries, and in some cases, subsequent periodic payments. We allocate a portion of the aggregate investor payments to the fair value of the assigned ITCs, which is estimated by discounting the projected cash flow impact of the ITCs using a market interest rate and is accounted for separately (see Note 2, *Summary of Significant Accounting Policies*). We account for the remainder of the investor payments as a borrowing by recording the proceeds received as a lease pass-through financing obligation, which is repaid from the future customer lease payments and any incentive rebates. A portion of the amounts received by the investor is allocated to interest expense using the effective interest rate method.

The lease pass-through financing obligation is non-recourse once the associated solar energy systems have been placed in-service and the associated customer arrangements have been assigned to the investors. However, we are required to comply with certain financial covenants specified in the contractual agreements, which we had met as of December 31, 2019. In addition, we are responsible for any warranties, performance guarantees, accounting and performance reporting. Furthermore, we continue to account for the customer arrangements and any incentive rebates in the consolidated financial statements, regardless of whether the cash is received by us or directly by the investors.

As of December 31, 2019, the future minimum master lease payments to be received from investors, for each of the next five years and thereafter, were as follows (in millions):

2020	$	42
2021		41
2022		33
2023		26
2024		18
Thereafter		450
Total	$	610

For two of the lease pass-through fund arrangements, our subsidiaries have pledged its assets to the investors as security for its obligations under the contractual agreements.

Each lease pass-through fund arrangement has a one-time master lease prepayment adjustment mechanism that occurs when the capacity and the placed-in-service dates of the associated solar energy systems are finalized or on an agreed-upon date. As part of this mechanism, the master lease prepayment amount is updated, and we may be obligated to refund a portion of a master lease prepayment or entitled to receive an additional master lease prepayment. Any additional master lease prepayments are recorded as an additional lease pass-through financing obligation while any master lease prepayment refunds would reduce the lease pass-through financing obligation.

Note 19 – Defined Contribution Plan

We have a 401(k) savings plan that is intended to qualify as a deferred salary arrangement under Section 401(k) of the Internal Revenue Code. Under the 401(k) savings plan, participating employees may elect to contribute up to 100% of their eligible compensation, subject to certain limitations. Participants are fully vested in their contributions. We did not make any contributions to the 401(k) savings plan during the years ended December 31, 2019, 2018 and 2017 (other than employee deferrals of eligible compensation).

Note 20 – Related Party Transactions

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

	December 31, 2019	December 31, 2018
Convertible senior notes due to related parties	$ 3	$ 3

Our convertible senior notes are not re-measured at fair value (refer to Note 5, *Fair Value of Financial Instruments*). As of December 31, 2019 and 2018, the unpaid principal balance of convertible senior notes due to related parties is $3 million.

In March 2017, our CEO purchased from us 95,420 shares of our common stock in a public offering at the public offering price for an aggregate $25 million.

In April 2017, our CEO exercised his right under the indenture to convert all of his Zero-Coupon Convertible Senior Notes due in 2020, which had an aggregate principal amount of $10 million. As a result, on April 26, 2017, we issued 33,333 shares of our common stock to our CEO in accordance with the specified conversion rate, and we recorded an increase to additional paid-in capital of $10 million.

In November 2018, our CEO purchased from us 56,915 shares of our common stock in a private placement at a per share price equal to the last closing price of our stock prior to the execution of the purchase agreement for an aggregate $20 million.

In May 2019, our CEO purchased from us 102,880 shares of our common stock in a public offering at the public offering price for an aggregate $25 million.

Note 21 – Segment Reporting and Information about Geographic Areas

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

	Year Ended December 31,		
	2019	2018	2017
Automotive segment			
Revenues	$ 23,047	$ 19,906	$ 10,643
Gross profit	$ 3,879	$ 3,852	$ 1,981
Energy generation and storage segment			
Revenues	$ 1,531	$ 1,555	$ 1,116
Gross profit	$ 190	$ 190	$ 242

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

	Year Ended December 31,		
	2019	2018	2017
United States	$ 12,653	$ 14,872	$ 6,221
China	2,979	1,757	2,027
Netherlands	1,590	965	331
Norway	1,201	813	823
Other	6,155	3,054	2,357
Total	$ 24,578	$ 21,461	$ 11,759

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

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

	December 31, 2019	December 31, 2018
United States	$ 15,644	$ 16,741
International	890	860
Total	$ 16,534	$ 17,601

Note 22 – Restructuring and Other

During the year ended December 31, 2019, we carried out certain restructuring actions in order to reduce costs and improve efficiency. As a result, we recognized $50 million of costs primarily related to employee termination expenses and losses from closing certain stores impacting both segments. We recognized $47 million in impairment related to the IPR&D intangible asset as we abandoned further development efforts (refer to Note 4, *Goodwill and Intangible Assets* for details) and $15 million for the related equipment within the energy generation and storage segment. We also incurred a loss of $37 million for closing operations in certain facilities. On the statement of cash flows, the amounts were presented in the captions in which such amounts would have been recorded absent the impairment charges. The employee termination expenses were substantially paid by December 31, 2019, while the remaining amounts were non-cash.

During the year ended December 31, 2018, we carried-out certain restructuring actions in order to reduce costs and improve efficiency and recognized $37 million of employee termination expenses and estimated losses from sub-leasing a certain facility. The employee termination cash expenses of $27 million were substantially paid by the end of 2018, while the remaining amounts were non-cash. Also included within restructuring and other activities was $55 million of expenses (materially all of which were non-cash) from restructuring the energy generation and storage segment, which comprised of disposals of certain tangible assets, the shortening of the useful life of a trade name intangible asset and a contract termination penalty. In addition, we concluded that a small portion of the IPR&D asset is not commercially feasible. Consequently, we recognized an impairment loss of $13 million. We recognized settlement and legal expenses of $30 million in the year ended December 31, 2018 for the settlement with the SEC relating to a take-private proposal for Tesla. These expenses were substantially paid by the end of 2018.

Note 23 – Quarterly Results of Operations (Unaudited)

The following table presents selected quarterly results of operations data for the years ended December 31, 2019 and 2018 (in millions, except per share amounts):

	Three Months Ended			
	March 31	June 30	September 30	December 31
2019				
Total revenues	$ 4,541	$ 6,350	$ 6,303	$ 7,384
Gross profit	$ 566	$ 921	$ 1,191	$ 1,391
Net (loss) income attributable to common stockholders	$ (702)	$ (408)	$ 143	$ 105
Net (loss) income per share of common stock attributable to common stockholders, basic	$ (4.10)	$ (2.31)	$ 0.80	$ 0.58
Net (loss) income per share of common stock attributable to common stockholders, diluted	$ (4.10)	$ (2.31)	$ 0.78	$ 0.56
2018				
Total revenues	$ 3,409	$ 4,002	$ 6,824	$ 7,226
Gross profit	$ 456	$ 619	$ 1,524	$ 1,443
Net (loss) income attributable to common stockholders	$ (709)	$ (718)	$ 311	$ 140
Net (loss) income per share of common stock attributable to common stockholders, basic	$ (4.19)	$ (4.22)	$ 1.82	$ 0.81
Net (loss) income per share of common stock attributable to common stockholders, diluted	$ (4.19)	$ (4.22)	$ 1.75	$ 0.78