XOMA LTD /DE/
Form 10-K/A
December 27, 2010

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

FORM 10-K/A
(Amendment No. 2)

x ANNUAL REPORT PURSUANT TO SECTION 13 or 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2009

OR

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

for the transition period from to

Commission File No. 0-14710

XOMA Ltd.
(Exact name of registrant as specified in its charter)

| | |
|---|---|
| Bermuda<br>(State or other jurisdiction of incorporation or organization) | 52-2154066<br>(I.R.S. Employer Identification No.) |
| 2910 Seventh Street, Berkeley, California 94710<br>(Address of principal executive offices, including zip code) | (510) 204-7200<br>(Telephone Number) |

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

| Title of each class | Name of each exchange on which registered |
|---|---|
| Common Shares, U.S. $0.0075 par value | The NASDAQ Global Market |
| Preference Share Purchase Rights | |

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

Indicate by check mark if the Registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.  Yes o   No x

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

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

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files).  Yes o    No o

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

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

Large Accelerated Filer o   Accelerated Filer x   Non-Accelerated filer o   Smaller reporting company o

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act of 1934).  Yes o     No x

The aggregate market value of voting shares held by non-affiliates of the registrant is $134,644,609 as of June 30, 2009

Number of Common Shares outstanding as of December 20, 2010: 23,525,430

## EXPLANATORY NOTE

This Amendment No. 2 on Form 10-K/A (this "Amendment No. 2") amends the Annual Report on Form 10-K for the fiscal year ended December 31, 2009 of XOMA Ltd. (the "Company," "we" or "us"), filed with the U.S. Securities and Exchange Commission (the "SEC") on March 11, 2010 (the "Original Form 10-K"), as previously amended by Amendment No. 1 on Form 10-K/A filed with the SEC on April 30, 2010 (together with the Original Filing, the "Form 10-K").

On each of September 21, 2010 and October 20, 2010, we received comment letters from the staff of the SEC relating to the staff's review of the Form 10-K. The purpose of this Amendment No. 2 is to respond to the comment letters. In this Amendment No. 2 we have included the following:

- Item 1. Business: We have included additional disclosure regarding material agreements with third parties.

- Item 11. Executive Compensation: We have included additional disclosure discussing option awards made to each named executive officer for the 2009 fiscal year and additional disclosure regarding the CEO Incentive Compensation Plan and Management Incentive Compensation Plan.

- Item 15. Exhibits, Financial Statement Schedules: We have filed as Exhibits 10.7 through 10.7D of this Amendment No. 2 each named executive officer's executed employment agreement.

- Signatures: We have clarified that the Company's Vice President, Finance and Chief Financial Officer is signing in the additional capacity of principal accounting officer.

Except as set forth above, the Form 10-K has not been amended, updated or otherwise modified. This Amendment No. 2 includes information contained in the Form 10-K, and we have made no attempt in the Amendment No. 2 to modify or update the disclosures presented in the Form 10-K, except as identified above. The disclosures in this Amendment No. 2 continue to speak as of the date of the Form 10-K, and do not reflect events occurring after the filing of the Form 10-K. Accordingly, this Amendment No. 2 should be read in conjunction with our other filings made with the SEC subsequent to the filing of the Form 10-K, including any amendments to those filings. The filing of this Amendment No. 2 shall not be deemed to be an admission that the Form 10-K, when made, included any untrue statement of a material fact or omitted to state a material fact necessary to make a statement not misleading.

Item 1. Business.

Overview

XOMA Ltd. ("XOMA"), a Bermuda company, is a biopharmaceutical company focused on the discovery, development and manufacture of therapeutic antibodies designed to treat inflammatory, autoimmune, infectious and oncological diseases. Our proprietary development pipeline includes XOMA 052, an anti-interleukin-1 beta ("IL-1 beta") antibody, XOMA 3AB, a biodefense anti-botulism antibody candidate, and preclinical antibody discovery programs in several indications. We have a fully integrated product development platform, extending from preclinical science to development and manufacturing. We have multiple revenue streams resulting from the licensing of antibody technologies, biodefense contracts and discovery and development collaborations and product royalties. Our technologies have contributed to the success of marketed antibody products, including LUCENTIS® (ranibizumab injection) for wet age-related macular degeneration and CIMZIA® (certolizumab pegol) for rheumatoid arthritis and Crohn's disease.

We have established on-going technology licensing programs for certain of our proprietary technologies, which have attracted numerous significant licensees including Bayer Heathcare AG, Johnson & Johnson (formerly Centocor, Inc.), Merck & Co., Inc. ("Merck"), Pfizer Inc. ("Pfizer") and Takeda Pharmaceutical Company Limited ("Takeda"). We have a premier antibody discovery and development platform that includes multiple antibody discovery or phage display libraries that increase our ability and that of our partners to discover new therapeutic antibodies. Once an antibody is discovered, we use a number of proprietary technologies including our Human Engineering™, affinity maturation, bacterial cell expression and manufacturing technologies to enhance and improve the qualities of the antibodies for efficacy, safety, stability, productivity and cost. Some of XOMA's technologies are used widely across the industry and have generated significant revenues for the company. For example, bacterial cell expression technology is a key biotechnology for the discovery and manufacture of antibodies and other proteins. Thus far, more than 50 pharmaceutical and biotechnology companies have signed bacterial cell expression licenses with us, and a number of licensed product candidates are in clinical development.

Our biodefense initiatives currently include a $65 million multiple-year contract funded by the National Institute of Allergy and Infectious Diseases ("NIAID"), a part of the National Institutes of Health ("NIH"), to support our ongoing development of drug candidates toward clinical trials in the treatment of botulism poisoning. XOMA also develops products with premier pharmaceutical companies including Novartis AG ("Novartis"), Schering-Plough Research Institute, a division of Schering Corporation, now a subsidiary of Merck (referred to herein as "Merck/Schering-Plough") and Takeda.

Strategy

We are advancing a pipeline of biologic products using our proven expertise, technologies and capabilities from antibody discovery through product development. We seek to expand our pipeline by developing proprietary products and technologies, providing contract services to government agencies responsible for biodefense and entering into licensing and collaborative arrangements with pharmaceutical and biotechnology companies. The principal elements of our strategy are to:

- Focus on advancing XOMA 052, our lead product candidate. Using our proprietary antibody technologies, capabilities and expertise, we discovered XOMA 052, an anti-IL-1 beta antibody, currently in Phase 2 clinical development for Type 2 diabetes, Type 1 diabetes, cardiovascular disease and other diseases. XOMA 052 has the potential to address the underlying inflammatory causes of a wide range of unmet medical needs by targeting IL-1 beta, which triggers inflammatory pathways in the body. In 2009, we successfully completed Phase 1 clinical development of XOMA 052 in Type 2 diabetes patients in which XOMA 052 was well-tolerated in a wide range of doses and demonstrated biological activity in diabetic outcomes and biomarkers of cardiovascular risk and inflammation.

- Generate licensing revenue from proprietary technologies and collaborations. We have a history of generating significant revenue from our proprietary technologies, including our antibody phage display libraries and our bacterial cell expression technology. In 2009, we entered into technology collaborations with several companies to provide access to multiple proprietary antibody research and development technologies. In addition, we have licensed our bacterial cell expression technology to more than 50 companies in exchange for license, milestone and other fees, royalties and complementary technologies, and a number of licensed product candidates are in clinical development. We believe that we can continue to generate significant revenue from our proprietary technologies in the future.

- Continue building biodefense business. To date, we have been awarded three contracts, totaling nearly $100 million, from NIAID, to support our ongoing development of XOMA 3AB and additional product candidates toward clinical trials in the treatment of botulism poisoning. In addition, in 2009 we expanded our biodefense programs to include two subcontracts with SRI International totaling $3.9 million, funded through NIAID, for the development of antibodies to neutralize H1N1 and H5N1 influenza viruses and the virus that causes severe acute respiratory syndrome ("SARS"). We will continue to seek further opportunities to work with government and other institutions.

Proprietary Products

As part of our strategy, we are focusing our technology and resources on advancing our emerging proprietary pipeline. Below is a summary of our proprietary products:

- XOMA 052 is a potent monoclonal antibody with the potential to improve the treatment of patients with a wide variety of inflammatory diseases. XOMA 052 binds strongly to IL-1 beta, a pro-inflammatory cytokine involved in the development of Type 2 diabetes, cardiovascular disease, rheumatoid arthritis, gout and other diseases. By binding to IL-1 beta, XOMA 052 inhibits the activation of the IL-1 receptor, thereby preventing the cellular signaling events that produce inflammation. XOMA 052 is a humanized IgG2 antibody with a half-life of 22 days. Based on its binding properties, specificity to IL-1 beta and half-life, XOMA 052 may provide convenient dosing of once per month or less frequently.

In the fourth quarter of 2009, we announced the initiation of our Phase 2 clinical program for XOMA 052 in Type 2 diabetes, Type 1 diabetes and cardiovascular disease. The clinical trials are designed to further evaluate the use of multiple dose regimens on the safety, pharmacodynamics and efficacy of XOMA 052 in cardiometabolic and other diseases, and based on positive results, select doses for pivotal Phase 3 studies. In February of 2010, we announced that enrollment had begun in a 325-patient Phase 2 dose-ranging clinical trial of XOMA 052 in Type 2 diabetes patients. The initiation of the Phase 2 clinical program follows the announcement in July of 2009 of positive results from the U.S. Phase 1 trial, which continued to demonstrate that XOMA 052 is well tolerated in patients. Further XOMA 052 showed clinically meaningful reductions in glycosylated hemoglobin, fasting blood glucose, high sensitivity C-reactive protein and erythrocyte sedimentation rate, a standard biomarker of systemic inflammation and cardiovascular risk. Generally, a more consistent response was seen across patients in a multiple dose regimen compared to the single dose regimens. Pharmacokinetic results continue to support monthly or less frequent dosing.

We developed XOMA 052 using our proprietary antibody technologies, capabilities and expertise. XOMA owns worldwide rights to the antibody and related intellectual property.

- XOMA 3AB is a multi-antibody product designed to neutralize the most potent of the botulinum toxins, Type A, which causes paralysis and is a bioterrorism threat. Our anti-botulism program was recently expanded to include additional product candidates and is the first of its kind to combine multiple human antibodies to target a broad spectrum of the most toxic botulinum toxins, including the three most toxic serotypes of botulism, Types A, B and E. The antibodies are designed to bind to each toxin and enhance the clearance of the toxin from the body. The use of multiple antibodies increases the likelihood of clearing the harmful toxins by providing specific protection against each toxin type.  In contrast to existing agents that treat botulism, XOMA uses advanced human monoclonal antibody technologies in an effort to achieve superior safety, potency and efficacy, and avoid life threatening immune reactions associated with animal-derived products.

XOMA 3AB is in the pre-Investigational New Drug (“IND”) stage, currently in nonclinical studies to assess safety through funding provided by NIAID. We have a history of successfully providing contract services to the U.S. government for the development of anti-botulinum neurotoxin antibodies.

- Preclinical Product Pipeline: We are pursuing additional opportunities to further broaden our preclinical product pipeline. These include internal discovery programs, product development collaborations with other pharmaceutical and biotechnology companies and evaluations of product in-licensing, in-kind product trades and acquisition opportunities.

Partnership Products

XOMA partners with world-class organizations in research and development of new antibody products. Below is a list of activities in 2009 through such collaborations:

- Therapeutic Antibodies with Takeda: Since 2006, Takeda has been a partner for therapeutic monoclonal antibody discovery and development against multiple targets selected by them. In February of 2009, we expanded our existing collaboration to provide Takeda with access to multiple antibody technologies, including a suite of research and development technologies and integrated information and data management systems. As part of the expanded collaboration, we received a $29 million expansion fee, before taxes and other costs, and we may receive potential milestones and royalties on sales of antibody products in the future.

- Therapeutic Antibodies with Merck/Schering-Plough: Merck/Schering-Plough has been a partner since 2006 for therapeutic monoclonal antibody discovery and development against multiple targets selected by them, and we are currently supporting development through this partnership.

- Therapeutic Antibodies with Novartis: In November of 2008, we restructured our product development collaboration with Novartis. Under the restructured agreement, Novartis received control over the two ongoing programs under the original product development collaboration entered into in 2004 with Novartis (then Chiron Corporation). In exchange, we recognized $13.7 million in revenue in 2008 and may, in the future, receive milestones and double-digit royalty rates for the programs and options to develop or receive royalties on four additional programs. In December of 2008, we entered into a Manufacturing and Technology Transfer Agreement with Novartis, effective July 1, 2008. Under this agreement, XOMA was engaged by Novartis to perform research and development, process development, manufacturing and technology transfer activities with respect to the ongoing product programs now controlled by Novartis under the restructured product development collaboration. We completed this work in the third quarter of 2009.

Royalties and Technology Licenses

Royalties

XOMA earns low-single digit royalties on sales of CIMZIA® (certolizumab pegol) in the U.S. and Canada from UCB Celltech, a branch of UCB S.A. (“UCB”). Royalties earned from these sales were $0.5 million in 2009 and $0.1 in 2008. CIMZIA®, an anti-tumor necrosis factor product, was approved by the U.S. Food and Drug Administration (“FDA”) in April of 2008 for the treatment of moderate-to-severe Crohn’s disease in adults who have not responded to conventional therapies. In addition, CIMZIA® was approved for the treatment of moderate-to-severe rheumatoid arthritis in adults by the FDA in May of 2009 and in Canada in September of 2009. UCB is responsible for the marketing and sales effort in support of this product.  According to UCB, worldwide net sales of CIMZIA® were approximately $104.6 million during 2009.

XOMA earned mid- and low-single digit royalties on the following marketed antibody products in 2009:

- LUCENTIS® (ranibizumallinjection) by Genentech, Inc., a wholly-owned member of the Roche Group (referred to herein as "Genentech"): LUCENTIS®, for the treatment of neovascular wet age-related macular degeneration, was approved by the FDA in June of 2006 and in the European Union in January of 2007, where it is distributed by Novartis. It is the first marketed therapeutic product manufactured under a license using our bacterial cell expression technology. In the third quarter of 2009, we sold our LUCENTIS® royalty interest to Genentech for $25 million, which included the receipt of royalties of $2.7 million earned in the second quarter of 2009 and an additional cash payment of $22.3 million. We earned royalties on worldwide sales of LUCENTIS® for the first half of 2009 of $5.1 million. During 2008, we earned royalties on worldwide sales of LUCENTIS® of $8.8 million.

- RAPTIVA® (efalizumab) with Genentech: RAPTIVA®, a humanized therapeutic monoclonal antibody, was the first biologic therapy designed to provide long-term control of chronic moderate-to-severe plaque psoriasis. RAPTIVA® was approved by the FDA in October of 2003 and in the European Union in September of 2004. RAPTIVA® was withdrawn from the commercial drug markets due to safety concerns in the first half of 2009, at which point royalties from RAPTIVA® sales ceased. In 2009, we earned royalties of $1.2 million from worldwide sales of RAPTIVA®, compared with $12.2 million during 2008. Refer to "We do not know whether there will be, or will continue to be, a viable market for the products in which we have an ownership or royalty interest" and "We are exposed to an increased risk of product liability claims, and a series of related cases is currently pending against us" under Item IA: Risk Factors for a discussion of certain risks associated with RAPTIVA®.

Technology Licenses

Below is a summary of certain proprietary technologies owned by us and available for licensing to other companies:

- Antibody discovery technologies: XOMA uses human antibody phage display libraries in its discovery of therapeutic candidates, and we offer access to multiple libraries, including novel libraries developed internally, as part of our collaboration business. We believe that access to multiple libraries offers a number of benefits to XOMA and its partners, because it enables use of libraries best suited to the needs of a particular discovery project to increase the probability of technical and business success in finding rare and unique functional antibodies directed to targets of interest.

In 2009, we recognized $42.3 million in revenue related to the licensing of our antibody discovery technologies. In February of 2009, we expanded our existing collaboration with Takeda to provide Takeda with access to multiple antibody discovery technologies for a $29 million expansion fee, before taxes and other costs. In addition, in the second half of 2009, we entered into antibody discovery collaborations with Arana Therapeutics Limited, a wholly-owned subsidiary of Cephalon, Inc. ("Arana"), and The Chemo-Sero-Therapeutic Research Institute, a Japanese research foundation known as Kaketsuken, involving multiple proprietary XOMA antibody research and development technologies for fees of $6 million and $8 million, respectively. We may be entitled to future milestone payments and royalties on product sales related to the antibody discovery collaborations.

- Bacterial Cell Expression: The production or expression of antibodies using bacteria is an enabling technology for the discovery and selection, as well as the development and manufacture, of recombinant protein pharmaceuticals, including diagnostic and therapeutic antibodies for commercial purposes. Genetically engineered bacteria are used in the recombinant expression of target proteins for biopharmaceutical research and development. Reasons include the relative simplicity of gene expression in bacteria as well as many years of experience culturing such species as E. coli in laboratories and manufacturing facilities. In support of our own biopharmaceutical development efforts, XOMA scientists have developed bacterial expression technologies for producing antibodies and other recombinant protein products.

We have granted over 50 licenses to biotechnology and pharmaceutical companies to use our patented and proprietary technologies relating to bacterial expression of recombinant pharmaceutical products. Bacterial antibody expression is also a key technology used in multiple systems for high-throughput screening of antibody domains. Expression of antibodies by phage display technology, for example, depends upon the expression and secretion of antibody domains from bacteria as properly folded, functional proteins.

Many licensees of our bacterial cell expression technology have developed, or are in the process of developing, antibodies for which we may be entitled to future milestone payments and royalties on product sales. Under the terms of our license agreement with Pfizer, signed in 2007, we received an up-front cash payment of $30 million and from 2008 through 2009 we received milestone payments relating to four undisclosed product candidates, including a payment of $0.5 million for the initiation of a Phase 3 clinical trial. We may also be eligible for additional milestone payments aggregating up to $4.9 million relating to these four product candidates and low single-digit royalties on future sales of all products subject to this license. In addition, we may receive potential milestone payments aggregating up to $1.7 million for each additional qualifying product candidate. Our right to milestone payments expires on the later of the expiration of the last-to-expire licensed patent or the tenth anniversary of the effective date. Our right to royalties expires upon the expiration of the last-to-expire licensed patent.

Current licensees include but are not limited to the following companies:

| | | |
|---|---|---|
| Active Biotech AB | Crucell Holland B.V. | Novartis AG |
| Affimed Therapeutics AG | Dompe, s.p.a. | Pfizer, Inc. |
| Affitech AS | Dyax Corp. | Schering Corporation (now a subsidiary of Merck & Co., Inc.) |
| Alexion Pharmaceuticals, Inc. | E.I. duPont de Nemours and Company | Takeda Pharmaceutical Company Ltd. |
| Applied Molecular Evolution, Inc. (now a subsidiary of Eli Lilly and Company) | Eli Lilly and Company | The Medical Research Council |
| Avecia Limited | Genentech, Inc. (now a member of the Roche Group) | UCB S.A. |
| Aventis Pharma Deutschland GmbH (Hoechst) (now Sanofi-Aventis) | Invitrogen Corporation | Unilever plc |
| Bayer Healthcare AG | Merck & Co., Inc. | Verenium Corporation |
| BioInvent International AB | Mitsubishi Tanabe Pharma Corporation | Wyeth Pharmaceuticals Division (now a member of Pfizer, Inc.) |
| Centocor, Inc. | MorphoSys AG | ZymoGenetics, Inc. |

These licenses are sometimes associated with broader agreements which may include expanded license rights, cell line development and process development.

- Human Engineering™: Human Engineering™ is a proprietary technology that allows modification of non-human monoclonal antibodies to reduce or eliminate detectable immunogenicity and make them suitable for medical purposes in humans. The technology uses a unique method developed by us, based on analysis of the conserved structure-function relationships among antibodies. The method defines which residues in a non-human variable region are candidates to be modified. The result is a Human

Engineered™ antibody with preserved antigen binding, structure and function, and with eliminated or greatly reduced immunogenicity. Human Engineering™ technology is used in development of XOMA 052 and certain other antibody products.

- Targeted Affinity Enhancement™ (TAE): TAE is a proprietary technology involving the assessment and guided substitution of amino acids in antibody variable regions, enabling efficient optimization of antibody binding affinity and selectivity modulation. TAE generates a comprehensive map of the effects of amino acid mutations likely to impact binding. The technology is utilized by XOMA scientists and has been licensed to a number of our collaborators.

We also have access to certain intellectual property rights and services that augment our existing integrated antibody technology platform and development capabilities and further compress product development timelines. This broad antibody technology platform and expertise is available for building our antibody product pipeline as well as those of our collaborators.

Proprietary Product Summary:

The following table describes important information related to the proprietary products we are currently developing:

| Program | Description | Indication | Status | Developer |
|---|---|---|---|---|
| XOMA 052 | HET™ antibody to IL-1 beta | Type 2 diabetes, Type 1 diabetes, cardiovascular disease and rheumatology disease | Phase 2 for Type 2 diabetes, Type 1 diabetes, cardiovascular disease | Proprietary |
| XOMA 3AB | Therapeutic antibodies to multiple botulinum neurotoxins | Botulism poisoning | Pre-IND | Proprietary (NIAID-funded) |
| Multiple preclinical programs | Fully human monoclonal antibodies to undisclosed disease targets | Inflammatory, autoimmune, infectious and oncological diseases | Preclinical | Proprietary |

Partnership Product Summary:

The following table describes important information related to certain products that we are currently developing or have developed in the past, for which we may earn royalties on product sales in the future:

| Program | Description | Indication | Status | Developer |
|---|---|---|---|---|
| Therapeutic antibodies | Fully human monoclonal | Undisclosed | Preclinical | Takeda (fully-funded) |

| | | | | |
|---|---|---|---|---|
| | antibodies to undisclosed disease targets | | | |
| Therapeutic antibodies | Fully human monoclonal antibodies to undisclosed disease targets | Undisclosed | Pre-IND | Merck/Schering-Plough (fully-funded) |
| HCD 122 and other therapeutic antibodies | Fully human antibody to CD40 and other monoclonal antibodies to undisclosed disease targets | B-cell cancers and other undisclosed diseases | Various phases of clinical and preclinical development | Novartis |

Licensed Product Summary:

The following table describes important information related to certain products developed under licenses with us, for which we earn or may earn royalties on product sales in the future:

| Program | Description | Indication | Status | Developer |
|---|---|---|---|---|
| CIMZIA® (certolizumab pegol) | Anti-TNF alpha antibody fragment | Rheumatoid arthritis and Crohn's disease | Marketed in the U.S. and Canada for which XOMA earns royalties on product sales | UCB (marketed product) |
| Various products in development by Pfizer | Various monoclonal antibodies to undisclosed disease targets | Undisclosed diseases | Various phases of clinical and preclinical development | Pfizer |
| Various products in development by other licensees | Various monoclonal antibodies to undisclosed disease targets | Undisclosed diseases | Various phases of clinical and preclinical development | Various licenses |

Financial and Legal Arrangements of Product Collaborations, Licensing and Other Arrangements

Current Agreements

Takeda

In November of 2006, we entered into a fully funded collaboration agreement with Takeda for therapeutic monoclonal antibody discovery and development. Under the agreement, we will discover and optimize therapeutic antibodies against multiple targets selected by Takeda. Takeda will make up-front, annual maintenance and milestone payments to us, fund our research and development and manufacturing activities for preclinical and early clinical studies and pay royalties on sales of products resulting from the collaboration. Takeda will be responsible for clinical trials and commercialization of drugs after an IND submission and is granted the right to manufacture once a product enters into Phase 2 clinical trials. In the fourth quarter of 2009, certain discovery and development programs under this collaboration were discontinued following analysis of the research data. This resulted in the recognition of $2.8 million of the remaining unamortized balance in deferred revenue pertaining to the discontinued programs.

Under the terms of this agreement, we may receive potential milestone payments aggregating up to $20.75 million relating to one undisclosed product candidate and low single-digit royalties on future sales of all products subject to this license. In addition, in the event Takeda were to develop additional future qualifying product candidates under the terms of our agreement, we would be eligible for potential milestone payments aggregating up to $20.75 million for each such qualifying product candidate. Our right to milestone payments expires on the later of the receipt of payment from Takeda of the last amount to be paid under the agreement or the cessation of all research and development activities with respect to all program antibodies, collaboration targets and/or collaboration products. Our right to royalties expires on the later of 13.5 years from the first commercial sale of each royalty-bearing discovery product or the expiration of the last-to-expire licensed patent.

In February of 2009 we expanded our existing collaboration to provide Takeda with access to multiple antibody technologies, including a suite of research and development technologies and integrated information and data management systems. We received a $29 million expansion fee, of which $23.2 million was received in cash in February of 2009 and the remainder was withheld for payment to the Japanese taxing authority. After deducting $0.9 million in costs incurred through the third quarter of 2009 related to the agreement, we recognized $28.1 million in revenue in 2009. We may receive potential milestones of up to $3.25 million per discovery product candidate and low single-digit royalties on future sales of all antibody products subject to this license. Our right to milestone payments expires on the later of the receipt of payment from Takeda of the last amount to be paid under the agreement or the cessation of all research and development activities with respect to all program antibodies, collaboration targets and/or collaboration products. Our right to royalties expires on the later of 10 years from the first commercial sale of such royalty-bearing discovery product, or the expiration of the last-to-expire licensed patent.

Arana

In September of 2009, we entered into an antibody discovery collaboration with Arana, a wholly-owned subsidiary of Cephalon, Inc., involving multiple proprietary XOMA antibody research and development technologies, including a new antibody phage display library and a suite of integrated information and data management systems. Arana agreed to pay us a fee of $6 million, and we may be entitled to future milestone payments aggregating up to $3 million per product, and low single-digit royalties on product sales. Our right to milestone payments expires the later of the receipt of payment from Arana of the last amount to be paid under the agreement, the cessation by Arana of the use of all research and development technologies or the cessation by Arana of the exercise of the patent rights granted to them. Our right to royalties expires five years from the first commercial sale of each royalty-bearing product.

Kaketsuken

In October of 2009, we entered into an antibody discovery collaboration with Kaketsuken, a Japanese research foundation, involving multiple proprietary XOMA antibody research and development technologies, including a new antibody phage display library and a suite of integrated information and data management systems. Kaketsuken agreed to pay us a fee of $8 million, and we may be entitled to future milestone payments aggregating up to $0.2 million per product, and low single-digit royalties on product sales. Our right to milestone payments expires upon the receipt of payment from Kaketsuken of the last amount to be paid pursuant to the agreement. Our right to royalties expires 15 years from the first commercial sale of each royalty-bearing discovery product.

NIAID

In March of 2005, we were awarded a $15 million competitive bid contract from NIAID to develop three anti-botulinum neurotoxin monoclonal antibodies. Under this contract, we created production cell lines using our proprietary antibody expression systems, built Master and Manufacturer's Working Cell Banks, developed production processes and produced initial quantities of the three antibodies. The contract was performed over an 18-month period and was fully funded with federal funds from NIAID under Contract No. HHSN266200500004C. Final acceptance of the project was received in October of 2006.

In July of 2006, we were awarded a $16.3 million contract funded with federal funds from NIAID under Contract No. HHSN266200600008C/N01-Al-60008 to produce monoclonal antibodies for the treatment of botulism to protect United States citizens against the harmful effects of botulinum neurotoxins used in bioterrorism. Under this contract, we have created and produced an innovative injectable product comprised of three anti-type A botulinum neurotoxin monoclonal antibodies to support entry into Phase 1 human clinical trials. This work was substantially complete as of December 31, 2009.

In September of 2008, we were awarded a third contract for $65 million funded with federal funds from NIAID under Contract No. HHSN272200800028C to continue development of our anti-botulinum antibody product candidates, including XOMA 3AB and additional product candidates. As part of the contract, we will develop, evaluate and produce the clinical supplies to support an IND filing with the FDA and conduct preclinical studies required to support human clinical trials.

SRI International

In the third quarter of 2009, we began work on two biodefense subcontract awards from SRI International, including a $1.7 million award to develop novel antibody drugs against the virus that causes severe acute respiratory syndrome and a $2.2 million award to develop a novel antibody, known as F10, that has been shown to neutralize group 1 influenza A viruses, including the H1N1 and H5N1 strains. The subcontract awards are funded through NIAID.

Novartis

In November of 2008, we restructured our product development collaboration with Novartis, which involves six development programs including the HCD122 program. HCD122, which is a fully human anti-CD40 antagonist antibody intended as a treatment for B-cell mediated diseases, including malignancies and autoimmune diseases, is currently recruiting patients for a Phase 1/2 lymphoma trial. The antibody has a dual mechanism of action that involves inhibition of CD40-ligand mediated growth and survival while recruiting immune effector cells to kill CD40-expressing tumor cells through a process known as antibody-dependent cellular cytotoxicity (ADCC). CD40, a member of the tumor necrosis factor, or TNF, family of antigens, is a cell surface antigen expressed in B-cell malignancies and involved in a broad variety of immune and inflammatory responses.

Under the restructured agreement, Novartis made a payment to us of $6.2 million in cash; reduced our existing debt by $7.5 million; will fully fund all future research and development expenses; may pay potential milestones of up to $14 million and royalty rates ranging from 10% to 20% for two ongoing product programs, including HCD122; and has provided us with options to develop or receive royalties on four additional programs. In exchange, Novartis has control over the HCD122 program and the additional ongoing program, as well as the right to expand the development of these programs into additional indications outside of oncology. As part of the agreement, Novartis paid us for all project costs incurred after July 1, 2008. Our right to milestone payments expires at such time as no collaboration product or former collaboration product is being developed or commercialized anywhere in the world and no royalty-style payments on these products are due. Our right to royalty-style payments expires on the later of the expiration of any licensed patent covering each product or 20 years from the launch of each product that is produced from a cell line provided to Merck/Schering-Plough by XOMA.

The collaboration between XOMA and Novartis (then Chiron Corporation) began in 2004 with the signing of an exclusive, worldwide, multi-product agreement to develop and commercialize multiple antibody products for the treatment of cancer. We shared expenses and revenue, generally on a 70-30 basis, with our share being 30 percent. Financial terms included initial payments to us in 2004 totaling $10 million and a note agreement, secured by our interest in the collaboration, to fund up to 75 percent of our share of expenses beginning in 2005. The secured note agreement with Novartis, which was executed in May of 2005, is due and payable in full in June of 2015. At December 31, 2009, the outstanding principal balance under this note agreement totaled $13.3 million and, pursuant to the terms of the arrangement as restructured in November of 2008, we will not make any additional borrowings on the Novartis note. In the first quarter of 2007, the mutual obligations of XOMA and Novartis to work together on an exclusive basis in oncology expired, except with respect to existing collaborative product development projects.

In December of 2008, we entered into a Manufacturing and Technology Transfer Agreement with Novartis, effective July 1, 2008. Under this agreement, XOMA was engaged by Novartis to perform research and development, process development, manufacturing and technology transfer activities with respect to the ongoing product programs now controlled by Novartis under the restructured product development collaboration. The work performed by XOMA under this agreement, which was fully funded by Novartis, was completed in the third quarter of 2009.

Merck/Schering-Plough

In May of 2006, we entered into a fully funded collaboration agreement with Merck/Schering-Plough for therapeutic monoclonal antibody discovery and development. Under the agreement, Merck/Schering-Plough will make up-front, annual maintenance and milestone payments to us, fund our research and development activities related to the agreement and pay royalties on sales of products resulting from the collaboration. During the collaboration, we will discover therapeutic antibodies against multiple targets selected by Merck/Schering-Plough using multiple human antibody phage display libraries, may optimize antibodies through affinity maturation or other protein engineering, may use our proprietary Human Engineering™ technology to humanize antibody candidates generated by hybridoma techniques, perform preclinical studies to support regulatory filings, develop cell lines and production processes and produce antibodies for initial clinical trials. Merck/Schering-Plough selected the first target at the inception of the agreement and, in December of 2006, exercised its right to initiate the additional discovery and development programs.

In the second quarter of 2009, we successfully completed the agreed-upon activities of certain programs under the collaboration and transferred these programs to Merck/Schering-Plough for continued development. As a result, the number of discovery and development programs under this collaboration was reduced. This resulted in the recognition of $2.6 million in May of 2009 of the remaining unamortized balance in deferred revenue pertaining to these transferred programs. We may also be eligible for additional milestone payments aggregating up to $11.75 million relating to the undisclosed product candidates and low single-digit royalties on future sales of all products subject to this license. In addition, we may receive potential milestone payments aggregating up to $12.75 million for each additional qualifying licensed product candidate, if any. Our right to milestone payments expires upon the later of the expiration of the last-to-expire licensed patent, the expiration of the royalty term provided in the agreement or the cessation of all research and development activities with respect to all program antibodies, collaboration targets, and/or collaboration products. Our right to royalties expires 15 years from the first commercial sale of each royalty-bearing product.

Merck/Schering-Plough/AVEO Pharmaceuticals, Inc. (“AVEO”)

In April of 2006, we entered into an agreement with AVEO to utilize our Human Engineering™ technology to humanize AV-299, AVEO’s novel anti-HGF antibody, under which AVEO paid us an up-front license fee and development milestones. In addition, we will receive royalties on sales of products resulting from the agreement. Under this agreement we created four Human Engineering™ versions of the original AV-299, all of which met design goals and from which AVEO selected one as its lead development candidate. In September of 2006, as a result of the successful humanization of AV-299, we entered into a second agreement with AVEO to manufacture and supply AV-299 in support of early clinical trials. Under the agreement, we created AV-299 production cell lines, conducted process and assay development, and performed Good Manufacturing Practices (“cGMP”) manufacturing activities. AVEO retains all development and commercialization rights to AV-299 and may be required to pay XOMA annual maintenance fees, additional development milestones payments aggregating up to $6.3 million and low single-digit royalties on product sales in the future. Our right to milestone payments expires upon full satisfaction of all financial obligations of AVEO pursuant to the agreement. Our right to royalties expires on the later of 15 years from the first commercial sale of each royalty-bearing product or the expiration of the last-to-expire licensed patent.

In April of 2007, Merck/Schering-Plough entered into a research, development and license agreement with AVEO concerning AV-299 and other anti-HGF molecules. In connection with the aforementioned license agreement, AVEO has assigned its entire right, title and interest in, to and under its manufacturing agreement with XOMA to Merck/Schering-Plough. Revenue related to this contract declined in 2009 as a result of our nearing the end of the contracted service arrangement.

UCB

Celltech Therapeutics Ltd., now UCB Celltech, a branch of UCB, utilized our bacterial cell expression technology under license in the development of CIMZIA® for the treatment of moderate-to-severe Crohn's disease in adults who have not responded to conventional therapies and for the treatment of moderate-to-severe rheumatoid arthritis in adults. We are entitled to receive a low single-digit royalty on sales of CIMZIA® in countries where our bacterial cell expression technology is patented, which includes the U.S. and Canada, until the expiration of the last-to-expire licensed patent. CIMZIA® was approved by the FDA in April of 2008 for the treatment of Crohn's disease and in May of 2009 for the treatment of rheumatoid arthritis. CIMZIA® was approved in Canada for the treatment of moderate-to-severe rheumatoid arthritis in adults in September of 2009.

Genentech

In April of 1996, we entered into a collaboration agreement with Genentech for the development of RAPTIVA®. In March of 2003, we entered into amended agreements which called for us to share in the development costs and called for Genentech to finance our share of development costs via a convertible subordinated loan. Under the loan agreement, upon FDA approval of the product, which occurred in October of 2003, we elected to pay $29.6 million of the development loan in convertible preference shares, which are convertible into approximately 3.8 million common shares at a price of $7.75 per common share.

In January of 2005, we restructured our arrangement with Genentech on RAPTIVA® under which we were entitled to receive mid-single-digit royalties on worldwide sales of RAPTIVA® in all indications. The previous cost and profit sharing arrangement for RAPTIVA® in the U.S. was discontinued and Genentech was responsible for all operating and development costs associated with the product. In the first half of 2009, RAPTIVA® was withdrawn from the commercial drug markets and royalties ceased.

Genentech utilized our bacterial cell expression technology under license in the development of LUCENTIS® for the treatment of neovascular wet age-related macular degeneration. LUCENTIS® was approved by the FDA in June of 2006 and in the European Union in January of 2007. We were entitled to receive a low-single-digit royalty on worldwide sales of LUCENTIS®. In the third quarter of 2009, we sold our LUCENTIS® royalty interest to Genentech for $25 million, including royalty revenue from the second quarter of 2009. We will not receive any further royalties from sales of LUCENTIS®.

Equity Agreements

In May of 2009, we entered into a definitive agreement with an institutional investor to sell 11,764,706 units, with each unit consisting of one of our common shares and a warrant to purchase 0.50 of a common share, for gross proceeds of approximately $10 million, before deducting placement agent fees and estimated offering expenses of $0.8 million, in a registered direct offering. The investor purchased the units at a price of $0.85 per unit. The warrants, which represent the right to acquire an aggregate of up to 5,882,353 common shares, were exercisable at any time on or after May 15, 2009 and prior to May 20, 2014 at an exercise price of $1.02 per share. As of December 31, 2009, all warrants issued in May of 2009 remained outstanding. Refer to Item 7: Management's Discussion and Analysis of Financial Condition and Results of Operations: Subsequent Events for disclosure regarding certain amendments made to the terms of the warrants issued in May of 2009 and the number of shares issued upon exercise of these warrants subsequent to the end of 2009.

In June of 2009, we entered into a definitive agreement with certain institutional investors to sell 10,434,782 units, with each unit consisting of one of our common shares and a warrant to purchase 0.50 of a common share, for gross proceeds of approximately $12 million, before deducting placement agent fees and estimated offering expenses of $0.8 million, in a second registered direct offering. The investor purchased the units at a price of $1.15 per unit. The warrants, which represent the right to acquire an aggregate of up to 5,217,391 common shares, are exercisable at any time on or prior to December 10, 2014 at an exercise price of $1.30 per share. As of December 31, 2009, all warrants issued in June of 2009 remained outstanding. Refer to Item 7: Management's Discussion and Analysis of Financial

Condition and Results of Operations: Subsequent Events for disclosure regarding certain amendments made to the terms of the warrants issued in June of 2009 subsequent to the end of 2009.

In the third quarter of 2009, we entered into an At Market Issuance Sales Agreement (the "ATM Agreement"), with WM Smith & Co. ("WM Smith"), under which we may sell up to 25 million of our common shares from time to time through WM Smith, as the agent for the offer and sale of the common shares. WM Smith may sell these common shares by any method permitted by law deemed to be an “at the market” offering as defined in Rule 415 of the Securities Act of 1933, including but not limited to sales made directly on The NASDAQ Global Market, on any other existing trading market for the common shares or to or through a market maker. WM Smith may also sell the common shares in privately negotiated transactions, subject to our approval. We pay WM Smith a commission equal to 3% of the gross proceeds of all common shares sold through it as sales agent under the ATM Agreement but in no event less than $0.02 per share. Shares sold under the ATM Agreement are sold pursuant to a prospectus which forms a part of a registration statement declared effective by the Securities and Exchange Commission on May 29, 2008. From the inception of the ATM Agreement through December 31, 2009, we sold a total of 4,050,617 common shares under this agreement for aggregate gross proceeds of $2.9 million. Refer to Item 7: Management’s Discussion and Analysis of Financial Condition and Results of Operations: Subsequent Events for disclosure regarding the number of common shares sold under this agreement subsequent to the end of 2009.

Recently Terminated Agreements

Goldman Sachs Term Loan

In September of 2009, we fully repaid our term loan facility with Goldman Sachs, which was a five-year term loan facility originally entered into in November of 2006 and refinanced in May of 2008. As previously disclosed we were not in compliance with the requirements of the relevant provisions of this loan facility, due to the cessation of royalties from sales of RAPTIVA®. Repayment of this loan facility discharged all of our obligations to the lenders.

We repaid the outstanding principal balance of $42 million, accrued interest to the date of payment of $2.4 million and a prepayment premium of $2.5 million. In the third quarter of 2009, we recorded a loss on repayment of debt of $3.6 million, which included the prepayment premium and the recognition of unamortized debt issuance costs of $1.1 million.

Equity Line of Credit

In October of 2008, we entered into a common share purchase agreement (the “Purchase Agreement”) with Azimuth Opportunity Ltd. (“Azimuth”), pursuant to which we obtained a committed equity line of credit facility (the “Facility”) under which we could sell up to $60 million of our registered common shares to Azimuth over a 24-month period, subject to certain conditions and limitations. Shares under the Facility were sold pursuant to a prospectus which forms a part of a registration statement declared effective by the Securities and Exchange Commission on May 29, 2008. At the end of the third quarter of 2009, the Facility was no longer in effect, and no additional shares can be issued thereunder. From the inception of the Facility through 2009, we sold a total of 42,228,428 common shares to Azimuth for aggregate gross proceeds of $33.9 million. This included the sale of 34.3 million shares in two transactions in September of 2009 that Azimuth agreed to purchase notwithstanding that the purchase prices were below the minimum price of $1.00 required by the Purchase Agreement. We negotiated a discount rate (excluding placement agent fees) of 8.0% for those transactions. Prior to the successful conclusion of negotiations, Azimuth was not obligated to purchase these shares. Offering expenses incurred in 2009 related to sales to Azimuth were $0.4 million.

Research and Development

Our research and development expenses currently include costs of personnel, supplies, facilities and equipment, consultants, third party costs and other expenses related to preclinical and clinical testing. In 2009, our research and development expenses were $58.1 million compared with $82.6 million in 2008 and $66.2 million in 2007.

Our research and development activities can be divided into those related to our internal projects and those related to collaborative and contract arrangements, which are reimbursed by our customers. In 2009, research and development expenses related to internal projects were $42.2 million compared with $58.5 million in 2008 and $45.8 million in 2007. In 2009, research and development expenses related to collaborative and contract arrangements were $15.9 million compared with $24.1 million in 2008 and $20.4 million in 2007. Refer to Item 7:

Management's Discussion and Analysis of Financial Condition and Results of Operations—Research and Development Expenses for further information regarding our research and development expenses.

Competition

The biotechnology and pharmaceutical industries are subject to continuous and substantial technological change. Competition in the areas of recombinant DNA-based and antibody-based technologies is intense and expected to increase as new technologies emerge and established biotechnology firms and large chemical and pharmaceutical companies continue to advance in the field. A number of these large pharmaceutical and chemical companies have enhanced their capabilities by entering into arrangements with or acquiring biotechnology companies or entering into business combinations with other large pharmaceutical companies. Many of these companies have significantly greater financial resources, larger research and development and marketing staffs and larger production facilities than ours. Moreover, certain of these companies have extensive experience in undertaking preclinical testing and human clinical trials. These factors may enable other companies to develop products and processes competitive with or superior to ours. In addition, a significant amount of research in biotechnology is being carried out in universities and other non-profit research organizations. These entities are becoming increasingly interested in the commercial value of their work and may become more aggressive in seeking patent protection and licensing arrangements. Furthermore, many companies and universities tend not to announce or disclose important discoveries or development programs until their patent position is secure or, for other reasons, later. As a result, we may not be able to track development of competitive products, particularly at the early stages. There can be no assurance that developments by others will not render our products or technologies obsolete or uncompetitive.

Without limiting the foregoing, we are aware of the following competitors for the products and candidates shown in the table below. This table is not intended to be representative of all existing competitors in the market:

| Product/Candidate | Competitors |
|---|---|
| XOMA 052 | Amgen, Inc.<br>Biovitrum AB<br>Cytos Biotechnology AG<br>Eli Lilly and Company<br>Novartis AG<br>Regeneron Pharmaceuticals, Inc. |
| XOMA 3AB | Cangene Corporation<br>Emergent BioSolutions, Inc. |
| CIMZIA® | Abbott Laboratories<br>Amgen, Inc.<br>Johnson & Johnson |

Regulatory

Our products are subject to comprehensive preclinical and clinical testing requirements and to approval processes by the FDA and by similar authorities in other countries. Our products are primarily regulated on a product-by-product basis under the United States Food, Drug and Cosmetic Act and Section 351(a) of the Public Health Service Act. Most of our human therapeutic products are or will be classified as biologic products. Approval of a biologic for commercialization requires licensure of the product and the manufacturing facilities. The review of therapeutic biologic products is carried out by the FDA's Center for Drug Evaluation and Research, the body that also reviews drug products.

The FDA regulatory process is carried out in several phases.  Prior to beginning human clinical testing of a proposed new biologic product, an IND is filed with the FDA.  This document contains scientific information on the proposed product, including results of testing of the product in animal and laboratory models.  Also included is information on manufacturing the product and studies on toxicity in animals and a clinical protocol outlining the initial investigation in humans.

The initial stage of clinical testing, Phase 1, ordinarily encompasses safety, pharmacokinetic and pharmacodynamic evaluations. Phase 2 testing encompasses investigation in specific disease states designed to provide preliminary efficacy data and additional information on safety. Phase 3 studies are designed to further establish clinical safety and efficacy and to provide information allowing proper labeling of the product following approval. Phase 3 studies are most commonly multi-center, randomized, placebo-controlled trials in which rigorous statistical methodology is applied to clinical results. Other designs may also be appropriate in specific circumstances.

Following completion of clinical trials, a BLA is submitted to the FDA to request marketing approval. Internal FDA committees are formed that evaluate the application, including scientific background information, animal and laboratory efficacy studies, toxicology, manufacturing facility and clinical data. During the review process, a dialogue between the FDA and the applicant is established in which FDA questions are raised and additional information is submitted. During the final stages of the approval process, the FDA generally requests presentation of clinical or other data before an FDA advisory committee, at which point, some or all of such data may become available. Also, during the later stages of review, the FDA conducts an inspection of the manufacturing facility to establish that the product is made in conformity with good manufacturing practice. If all outstanding issues are satisfactorily resolved and labeling established, the FDA issues a license for the product and for the manufacturing facility, thereby authorizing commercial distribution.

The FDA has substantial discretion in both the product approval process and the manufacturing approval process. It is not possible to predict at what point, or whether, the FDA will be satisfied with our submissions or whether the FDA will raise questions which may delay or preclude product approval or manufacturing facility approval. As additional clinical data is accumulated, it will be submitted to the FDA and may have a material impact on the FDA product approval process. Given that regulatory review is an interactive and continuous process, we have adopted a policy of limiting announcements and comments upon the specific details of the ongoing regulatory review of our products, subject to our obligations under the securities laws, until definitive action is taken. There can be no assurance any of the products we have under development will be developed successfully, obtain the requisite regulatory approval or be successfully manufactured or marketed.

In Europe, most of our human therapeutic products are or will be classified as biological medicinal products which are assessed through a centralized procedure by the European Medicines Agency (“EMEA”). The EMEA coordinates the evaluation and supervision of medicinal products throughout the European Union and the European Economic Area. The assessment of the Marketing Authorization Application (“MA”) is carried out by a Rapporteur and a Co-Rapporteur appointed by the Committee for Medicinal Products for Human Use (“CHMP”), which is the expert scientific committee of the EMEA.

The Rapporteur and Co-Rapporteur are drawn from the CHMP membership representing member states of the European Union. In addition to their responsibility for undertaking scientific assessments of an application for a MA, the Rapporteur and the Co-Rapporteur liaise with the applicant on behalf of the CHMP in an effort to provide answers to queries raised by the CHMP. Their assessment report(s) is circulated to and considered by the full CHMP membership, leading to the production ultimately of a CHMP opinion which is transmitted to the applicant and the European Commission. The final decision on the grant of a MA is made by the European Commission as the licensing authority of the European Community (“Community”). Under Community law, a positive decision issued by the European Commission represents the grant of a MA. Such an authorization allows a medicinal product to be placed on the European market. Upon the grant of an MA in the European Union, certain member states require pricing approval before the product can be placed into commercial distribution.

Under Community law, the applicant may request grant of a MA under exceptional circumstances if comprehensive data on the efficacy and safety of the drug, under normal conditions of use cannot be provided because its intended indications are encountered so rarely (such as in the case of a medicinal product intended for treating an orphan disease) that comprehensive evidence cannot reasonably be collected, the present state of scientific knowledge will not allow comprehensive information to be collected, or it would be against generally accepted medical ethics to collect comprehensive information. The Rapporteur, Co-Rapporteur and the other CHMP members will assess the justification/data submitted for exceptional circumstances as part of the overall assessment of the benefit/risk of the application. It is up to the CHMP, during the review, to ultimately decide on whether grant of a MA under exceptional circumstances is justified on the evidence before them. Approval under exceptional circumstances is subject to a requirement for specific procedures related to safety and results of its use and is reviewed annually to reassess the risk-benefit balance of the product. Once approval is granted, the product can be marketed under the single European MA in all member states of the European Union and the European Economic Area. Consistent with the single MA, the labeling for Europe is identical throughout all member states except that all labeling must be translated into the local language of the country of intended importation and in relation to the content of the so called "blue box "on the outer packaging in which locally required information may be inserted.

Orphan drugs are those intended for use in rare diseases or conditions. As a result of the high cost of development and the low return on investment for rare diseases, governments provide regulatory and commercial incentives for the development of drugs for small disease populations. In the United States, the term "rare disease or condition" means any disease or condition which affects less than 200,000 persons in the United States. Applications for United States orphan drug status are evaluated and granted by the Office of Orphan Products Development ("OOPD") of the FDA. In the United States, orphan drugs are subject to the standard regulatory process for marketing approval but are exempt from the payment of user fees for licensure, receive market exclusivity for a period of seven years and some tax benefits, and are eligible for OOPD grants. In Europe, orphan medicinal products are those intended for the diagnosis, prevention or treatment of a life-threatening or chronically debilitating condition affecting not more than five in 10,000 persons in the Community. The EMEA's Committee for Orphan Medicinal Products ("COMP") reviews applications seeking orphan designation. If the European Commission agrees with a positive assessment made by COMP, then the product will receive a positive designation through adoption of a decision by the European Commission. Orphan medicinal products are exempt from fees for protocol assistance and scientific advice from the Scientific Advice Working Party during development, reduction or exemption of MA and other fees, and ten-year market exclusivity upon granting of a MA in respect of the approved clinical indication. Moreover, manufacturers may be eligible for grants or other financial incentives from the Community and Member States programs.

Patents and Trade Secrets

Patent and trade secret protection is important to our business and our future will depend in part on our ability to obtain patents, maintain trade secret protection and operate without infringing on the proprietary rights of others. As a result of our ongoing activities, we hold and have filed applications for a number of patents in the United States and internationally to protect our products and important processes. We also have obtained or have the right to obtain exclusive licenses to certain patents and applications filed by others. However, the patent position of biotechnology companies generally is highly uncertain and no consistent policy regarding the breadth of allowed claims has emerged from the actions of the U.S. Patent and Trademark Office ("Patent Office") with respect to biotechnology patents. Accordingly, no assurance can be given that our patents will afford protection against competitors with similar technologies, or others will not obtain patents claiming aspects similar to those covered by our patent applications.

We have established a portfolio of patents related to our bacterial expression technology, including claims to novel promoter sequences, secretion signal sequences, compositions, methods for expression and secretion of recombinant proteins from bacteria, including immunoglobulin gene products, and improved methods and cells for expression of recombinant protein products. U.S. Patent Nos. 5,576,195 and 5,846,818 are related to DNA encoding a pectate lyase signal sequence, recombinant vectors, host cells and methods for production and externalization of recombinant proteins. U.S. Patent Nos. 5,595,898, 5,698,435 and 5,618,920 address secretable immunoglobulin chains, DNA encoding the chains and methods for their recombinant production. U.S. Patent Nos. 5,693,493, 5,698,417 and

6,204,023 relate to methods for recombinant production/secretion of functional immunoglobulin molecules. U.S. Patent Nos. 7,094,579 and 7,396,661 relate to eukaryotic signal sequences and their use in methods for prokaryotic expression of recombinant proteins. U.S. Patent No. 6,803,210 relates to improved bacterial host cells that are deficient in one or more of the active transport systems for an inducer of an inducible promoter, such as arabinose for an araB promoter, and methods for the use of such cells for the production of recombinant proteins.  Most of the more important European patents in this portfolio expired in July of 2008 or earlier.

We have also established a portfolio of patent applications related to our mammalian expression technology, including U.S. Patent No. 7,192,737, related to methods for increasing the expression of recombinant polypeptides using expression vectors containing multiple copies of a transcription unit encoding a polypeptide of interest.

We have established a portfolio of patents and applications related to our Human Engineering™ technology, including U.S. Patent No. 5,766,886, directed to methods of modifying antibody variable domains to reduce immunogenicity.  Related patents and applications are directed to antibodies engineered according to our patented methods.  We believe that our patented Human Engineering™ ‘technology provides an attractive alternative to other humanization technologies.

We also have issued patents in the U.S. and Europe covering XOMA 052.  In May and September of 2009, the U.S. Patent and Trademark Office issued U.S. Patents 7,531,166 and 7,582,742, respectively, covering XOMA 052 and other antibodies and antibody fragments with similar binding properties for IL-1 beta, as well as nucleic acids, expression vectors and production cell lines for the manufacture of such antibodies and antibody fragments.  The patents provide exclusivity in the U.S. into 2027 and 2026 respectively.  In November of 2009, the European Patent Office granted a patent covering XOMA 052, as well as nucleic acids, expression vectors and production cell lines for the manufacture of XOMA 052.  The patent provides exclusivity in Europe into 2026.

If certain patents issued to others are upheld or if certain patent applications filed by others issue and are upheld, we may require certain licenses from others in order to develop and commercialize certain potential products incorporating our technology.  There can be no assurance that such licenses, if required, will be available on acceptable terms.

Where appropriate, we also rely on trade secrets to protect aspects of our technology.  However, trade secrets are difficult to protect.  We protect our proprietary technology and processes, in part, by confidentiality agreements with our employees, consultants and collaborators.  These parties may breach these agreements, and we may not have adequate remedies for any breach.  Our trade secrets may otherwise become known or be independently discovered by competitors.  To the extent that we or our consultants or collaborators use intellectual property owned by others, we may have disputes with our collaborators or consultants or other third parties as to the rights in related or resulting know-how and inventions.

International Operations

We believe that, because the pharmaceutical industry is global in nature, international activities will be a significant part of our future business activities and that, when and if we are able to generate income, a substantial portion of that income will be derived from product sales and other activities outside the United States.

A number of risks are inherent in international operations.  Foreign regulatory agencies often establish standards different from those in the United States.  An inability to obtain foreign regulatory approvals on a timely basis could have an adverse effect on our international business, financial condition and results of operations.  International operations may be limited or disrupted by the imposition of government controls, export license requirements, political or economic instability, trade restrictions, changes in tariffs, restrictions on repatriating profits, taxation or difficulties in staffing and managing international operations.  In addition, our business, financial condition and results of operations may be adversely affected by fluctuations in currency exchange rates.  There can be no assurance that we will be able to successfully operate in any foreign market.

Financial information regarding the geographic areas in which we operate is included in Note 13 to the Financial Statements:  Concentration of Risk, Segment and Geographic Information.

Concentration of Risk

In 2009, Takeda and Genentech each provided more than 10% of our total revenue, neither of which represents a related party to XOMA.  These key customers accounted for 65% of our total revenue in 2009 but were not responsible for any of the accounts receivable balance at December 31, 2009.  NIAID, Arana and Kaketsuken accounted for 90% of the accounts receivable balance at December 31, 2009.  The loss of one or more of these customers could have a material adverse effect on our business and financial condition.

In 2008, Genentech, Novartis and Merck/Schering-Plough each provided more than 10% of our total revenue, none of which represents a related party to XOMA.  These key customers accounted for 81 % of our total revenue in 2008 and represented 64% of the accounts receivable balance at December 31, 2008.  NIAID accounted for an additional 28% of the accounts receivable balance at December 31, 2008.  In 2007, Pfizer, Genentech, Merck/Schering-Plough and NIAID each provided more than 10% of our total revenue, none of which represent a related party to XOMA.

Organization

We were incorporated in Delaware in 1981 and became a Bermuda company effective December 31, 1998, when we completed a shareholder-approved corporate reorganization, changing our legal domicile from Delaware to Bermuda and our name to XOMA Ltd. When referring to a time or period before December 31, 1998, or when the context so requires, the terms “Company” and “XOMA” refer to XOMA Corporation, a Delaware corporation and the predecessor of XOMA Ltd.

Employees

As of March 9, 2010, we employed approximately 195 full-time employees (none of which are unionized) at our facilities, principally in Berkeley, California.  Our employees are primarily engaged in clinical, process development, research and product development, and in executive, business development, finance and administrative positions.  We consider our employee relations to be excellent.

Available Information

For information on XOMA’s investment prospects and risks, please contact Investor Relations and Corporate Communications at (800) 246-9662 or by sending an e-mail message to investorrelations@xoma.com.  Our principal executive offices are located at 2910 Seventh Street, Berkeley, California 94710, U.S.A. Our telephone number is (510) 204-7200.

The following information can be found on our website at http://www.xoma.com or can be obtained free of charge by contacting our Investor Relations Department:

- Our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and any amendments to those reports will be available as soon as reasonably practicable after such material is electronically filed with the United States Securities and Exchange Commission (“SEC”).  All reports we file with the SEC can also be obtained free of charge via EDGAR through the SEC’s website at http://www.sec.gov.

- Our policies related to corporate governance, including our Code of Ethics applying to our directors, officers and employees (including our principal executive officer and principal financial and accounting officer) that we have adopted to meet the requirements set forth in the rules and regulations of the SEC and its corporate governance principles are available.

- The charters of the Audit, Compensation and Nominating & Governance Committees of our Board of Directors are available.

We intend to satisfy the applicable disclosure requirements regarding amendments to, or waivers from, provisions of our Code of Ethics by posting such information on our website.

Item 11. Executive Compensation.

Compensation Discussion and Analysis

The primary objectives of the Company's compensation program are to enable the Company to attract, motivate and retain outstanding individuals and align their success with that of the Company's shareholders through the creation of shareholder value and achievement of strategic corporate objectives. We attract and retain executives by benchmarking against peer companies in our industry to ensure that our compensation packages remain competitive. This practice is discussed in greater detail below under the heading "Benchmarking." When creating an executive's overall compensation package, the different elements of compensation are considered in light of the role the executive will play in our achieving near term and longer term goals as well as the compensation packages provided to similarly situated executives at peer companies. We also tie short and long-term cash and equity rewards to the achievement of measurable corporate and individual performance criteria to create incentives that we believe enhance executive performance. Such performance criteria vary depending on individual executives' roles, but include value-adding achievements such as revenue generation, cost reduction, gains in production efficiency and timely completion of undertakings. None of our employees are covered by a pension plan or other similar benefit plan that provides for payments or other benefits at, following, or in connection with retirement.

Benchmarking

The Compensation Committee has the authority under its charter to engage the services of outside advisors, experts and others to assist the Compensation Committee. In accordance with this authority, the Compensation Committee has retained the services of Compensia, an independent consulting firm that specializes in executive compensation consulting (the "Consultant"), to assist the Compensation Committee in evaluating the Company's executive compensation program against the relevant market and to review executive compensation changes. The Consultant looked at base salary, incentive compensation, long-term share options and benefits. No other services were provided by the Consultant.

The Consultant created a survey (the "Executive Compensation Survey") which compared the Company's executive pay levels to those of a peer group of 30 companies. The peer group consisted of (1) core peers developed by targeting Phase II business and labor comparators with similar market capitalization and (2) aspirational peers generally representing Phase III and beyond comparators. The companies that comprised the peer group are: Affymax, Alexza Pharmaceuticals, Allos Therapeutics, Altus Pharmaceuticals, Amicus Therapeutics, Ardea Biosciences, Arena Pharmaceuticals, Array BioPharma, Cell Genesys, Cerus, Cytokinetics, Cytori Therapeutics, Dyax, Geron, Human Genome Sciences, ImmunoGen, Immunomedics, Incyte, Infinity Pharmaceuticals, Lexicon Pharmaceuticals, Medarex, Metabasis Therapeutics, Micromet, Neurocrine Biosciences, Regeneron Pharmaceuticals, Rigel Pharmaceuticals, Sangamo Biosciences, Seattle Genetics, Sunesis Pharmaceuticals, and Trubion Pharmaceuticals. In preparing the Executive Compensation Survey, the Compensation Committee has relied on the Consultant to conduct its own research, compile its own survey data and provide a summary of such data relevant to the Compensation Committee's decisions with respect to setting executive compensation levels.

As noted above, the Compensation Committee considers various benchmarks (i.e., the 25th percentile, the 50th percentile and the 75th percentile) based on the Executive Compensation Survey and chooses a benchmark for a particular year based on the level it deems most appropriate for the Company. For 2010, the Compensation Committee chose the 50th percentile as the benchmark. This process is performed to ensure that total compensation is competitive within the industry and appropriate when certain levels of performance are achieved. If, based on this evaluation, the Compensation Committee determines that the Company's current compensation levels are not appropriate or tailored to our compensation objectives, then the Compensation Committee may adjust the applicable compensation levels and targets accordingly.

As part of the benchmarking process, the Compensation Committee recognizes the practical reality that job responsibilities of persons with similar titles may vary significantly from company to company, and that a person's title is not necessarily descriptive of a person's duties. The Compensation Committee considers the scope and complexity of executive positions within the Executive Compensation Survey and compares these positions to the scope and complexity of our executive positions. The result is an assessment of the compensation being paid to our executives in light of the compensation being paid to persons performing duties of similar scope and complexity at the companies participating in the Executive Compensation Survey. The Compensation Committee uses this assessment to assist it in making decisions regarding appropriate compensation levels for our executive positions. The underlying principle of the evaluation methodology is to focus on identifying those positions that have a scope and complexity of responsibilities that are comparable to those duties exercised by each of our particular executives.

Compensation Components

Base Salary. The level of compensation paid to an officer is determined on the basis of the individual's overall experience, responsibility, performance and compensation level in his or her prior position (for newly hired officers), the individual's overall performance and compensation level at the Company during the prior year (for current employees), the compensation levels of peer companies (including the biotechnology companies listed above) and other labor markets in which the Company competes for employees, the performance of the Company's Common Shares during the prior fiscal year and such other factors as may be appropriately considered by the Board, by the Compensation Committee and by management in making its proposals to the Compensation Committee.

At the time of the Company's annual compensation review in early 2009, in light of economic conditions and in order to conserve the Company's cash resources, management recommended, and the Board agreed, not to implement merit-based salary increases to the Company's employees for 2009, even though the Company as a whole and many of its employees had performed to a level at which such increases would have been justified. In order to enable the Company to provide compensation at levels competitive with those of other biotechnology companies, as well as retain employees with the capabilities necessary to advance key business objectives, in December 2009, management recommended and the Board agreed to implement salary increases for employees whose performance merited such an increase, retroactive to the beginning of the 2009 salary cycle.

Long-Term Incentive Program. Long-term incentive compensation principally takes the form of incentive and non-qualified option grants pursuant to shareholder-approved equity-based compensation plans. These grants are designed to promote the convergence of long-term interests between the Company's key employees and its shareholders; specifically, the value of options granted will increase or decrease with the value of the Company's Common Shares. In this manner, key individuals are rewarded commensurately with increases in shareholder value. These grants also typically include a 4-year vesting period to encourage continued employment. The size of a particular option grant is determined based on the individual's position and contribution to the Company.

For grants during 2009, the number of options granted were determined based on employee performance and perceived potential, the numbers of options granted to such individuals in the previous fiscal year, the aggregate number of options held by each such individual, the number of options granted to similarly situated individuals in the pharmaceutical and biotechnology industries, the price of the Company's Common Shares relative to other companies in such industries and the resulting relative value of such options. Although no specific measures of corporate performance were considered, the fact that no incentive compensation was awarded under the Company's incentive compensation plans for 2008, notwithstanding that management had successfully achieved a percentage of the 2008 objectives under such plans in excess of the minimum required to make awards, was considered.

In February of 2009, Mr. Engle was granted options to purchase 600,000 common shares and Dr. Scannon and Messrs. Kurland, Margolin and Wells were each granted options to purchase 200,000 common shares. These numbers were arrived at after consideration of the factors described in the foregoing paragraph, without any of such factors being assigned a specific weighting or measured against quantified criteria, except when considering the number of options granted to similarly situated individuals in the pharmaceutical and biotechnology industries. In considering that factor, the number of options granted was benchmarked against the 25th percentile of the peer group companies. This percentile was selected over the initially recommended 50th percentile in light of the limited number of shares then available for grant under the Company’s long-term incentive plans.

Historically, option grants intended as long-term incentive compensation have been made pursuant to the Company's 1981 Share Option Plan (the "Option Plan") and Restricted Share Plan (the "Restricted Plan"). In May of 2010, the Compensation Committee and the full Board adopted, subject to shareholder approval, a new equity-based compensation plan, the 2010 Long Term Incentive and Share Award Plan (the "Long Term Incentive Plan"). The Long Term Incentive Plan is intended to consolidate the Company's long-term incentive compensation under a single plan, by replacing the Option Plan, the Restricted Plan and the 1992 Directors Share Option Plan (the "Directors Plan") going forward, and to provide a more current set of terms pursuant to which to provide this type of compensation. The Long Term Incentive Plan is described in greater detail below under the heading "Description of Long Term Incentive Plan."

Cash Bonus Plans.

CICP. In 2004, the Compensation Committee, the Board and the shareholders approved the CEO Incentive Compensation Plan (the "CICP") in order to make the Chief Executive Officer's ("CEO") compensation more commensurate with that of industry peers and because the Compensation Committee believed that it was not appropriate to include the CEO in the Management Incentive Compensation Plan given the CEO's active role in administering that plan.

Only our CEO is eligible to participate in the CICP and, depending on his or her performance and that of the Company, earn incentive compensation. As soon as practicable after the end of each fiscal year (the "Plan Period"), the Compensation Committee recommends to the Board and the Board determines whether and to what extent certain pre-established Company objectives for that Plan Period ("Company Objectives") have been met, each Company Objective having been assigned a percentage toward completion of the Company Objectives overall (each, a "Achievement Percentage"). For each Plan Period, unless 70% of the Company Objectives for that Plan Period have been met, no incentive compensation will be awarded. The Board retains considerable discretion both in determining the extent to which the Company Objectives are achieved and in considering additional factors which may influence its overall determinations.

The incentive compensation under the CICP is weighted based 70% on meeting Company Objectives and 30% based on a discretionary evaluation by the Compensation Committee. The award opportunity range for the CEO expressed as a percentage of his or her base salary is as follows: minimum award opportunity—25%; target award opportunity—50%; and maximum award opportunity—75%, in each case, of base salary.

The performance of the CEO is typically rated as soon as practicable following the conclusion of the Plan Period. Distribution of incentive compensation is generally made in February or March of the succeeding year after the Plan Period. The incentive awards granted under the CICP are payable in cash.

MICP . Certain employees are also compensated through the Management Incentive Compensation Plan (the "MICP"), in which officers (other than the CEO) and employees who have the title of Senior Director, Director or Manager, as well as certain additional discretionary participants chosen by the CEO, are eligible to participate. Under the MICP, at the beginning of each Plan Period, the Board (with advice from the Compensation Committee) establishes a target incentive compensation pool, which is then adjusted at year-end to reflect the Company's performance in achieving the Company Objectives.

After each Plan Period, the Board, based on the recommendation of the Compensation Committee, makes a determination as to the performance of the Company and MICP participants in meeting the Company Objectives and individual objectives for that Plan Period, which are determined from time to time by the Board in its sole discretion. Awards to MICP participants vary depending upon the level of achievement of the Company Objectives, the size of the incentive compensation pool and the MICP participants' base salaries and performance during the Plan Period as well as their expected ongoing contribution to the Company. The Company must meet a minimum percentage of the Company Objectives (currently 70%) for a particular Plan Period before any awards are made under the MICP for that Plan Period. The Board retains considerable discretion both in determining the extent to which the Company Objectives are achieved and in considering additional factors which may influence its overall determinations.

For officers, including the executive officers named in the “Summary Compensation Table” below other than Mr. Engle, the incentive compensation under the MICP is weighted based 50% on meeting Company Objectives, 30% based on individual objectives and 20% based on a discretionary evaluation by the CEO. The target award for these officers as a percentage of base salary is 30%, with an award opportunity range of 15% to 45% of base salary. For other MICP participants, the incentive compensation is weighted based either 40% or 30% on meeting Company Objectives, either 40% or 50% on individual objectives and, in all cases, 20% on a discretionary evaluation by the CEO. The award opportunities for these participants as a percentage of base salary range from a minimum of 5% to a maximum of 37.5% of base salary, depending on among other things the participants' position within the Company.

The performance of the MICP participants is typically rated as soon as practicable following the conclusion of the Plan Period. Distribution of incentive compensation is generally made in February or March of the succeeding year after the Plan Period. Awards under the MICP are payable in cash.

For 2009, 146 individuals were determined to be eligible to participate in the MICP, including all of the executive officers named in the "Summary Compensation Table" below other than Mr. Engle.

BCP . Employees who are not eligible to participate in the CICP or the MICP are also compensated through the Bonus Compensation Plan (the "BCP"). Under the BCP, at the beginning of each Plan Period, the Board (with advice from the Compensation Committee) establishes a target incentive compensation pool, which is then adjusted at year-end to reflect the Company's performance in achieving the Company Objectives.

After each Plan Period, the Board, based on the recommendation of the Compensation Committee, makes a determination as to the performance of the Company and BCP participants in meeting the Company Objectives, which are determined from time to time by the Board in its sole discretion. Awards to BCP participants vary depending upon the level of achievement of the Company Objectives, the size of the incentive compensation pool and the BCP participants' base salaries. The Company must meet a minimum percentage of the Company Objectives (currently 70%) before any awards are made under the BCP. Awards under the BCP are payable in cash.

For 2009, 69 individuals were determined to be eligible to participate in the BCP.

Bonus Determinations for 2009. For 2009, the Compensation Committee recommended and the Board approved the following Company Objectives: (1) generate $20 to 25 million in cash in the first half of 2009, which was assigned a 40% Achievement Percentage, (2) enter into a significantly beneficial corporate partnership with respect to the Company's lead product candidate, XOMA 052, by the end of 2009, which was assigned a 30% Achievement Percentage, (3) enter into technology licensing and/or collaboration transactions yielding at least a specified amount in upfront payments to the Company by the end of 2009, which was assigned a 15% Achievement Percentage, and (4) consolidate certain manufacturing operations, maintain certain manufacturing capacity and increase biodefense revenues, which was assigned a 15% Achievement Percentage. In February of 2010, the Board determined that the first such Company Objective had been exceeded, that the third and fourth such Company Objectives had been achieved and that the second such Company Objective had not been completed as of the end of 2009.

The Board, exercising its discretion, also took into account management's performance in response to the severe adverse conditions and events affecting the Company in 2009, including general economic declines and market instability, the sudden withdrawal of RAPTIVA®, in which the Company had a royalty interest, from the worldwide markets and the resulting threat of default under the Company's loan from Goldman Sachs Specialty Holdings, Inc. ("Goldman Sachs"), which had been secured by such royalty interest, as well as other achievements during the Plan Period, including the removal of the "going concern" qualification from the opinion of the Company's outside auditors regarding its 2008 financial statements, the sale of the Company's royalty interest in LUCENTIS® for $25 million, the Company's successful organizational restructuring and certain aspects of its financial performance for the Plan Period. The Board also noted that, in the previous year, management had recommended, and the Board had determined, not to award bonuses under either the CICP or the MICP with respect to 2008 in light of economic conditions affecting the Company and in order to conserve its cash resources, notwithstanding that the Company had met a percentage of the Company Objectives for 2008 in excess of the minimum required. After evaluating the various facts and circumstances described above, the Board concluded that in excess of 100% of the Company Objectives had been achieved for the 2009 Plan Period. As a result, the CEO and each of the other named executive officers received in excess of the target amounts attributable to achievement of the Company Objectives under the CICP and the MICP, as applicable.

Under the CICP, Mr. Engle had no individual objectives for 2009 other than the Company Objectives. Individual objectives for 2009 under the MICP for Dr. Scannon were: (1) advance the development of XOMA 052 and the Company's antibody platform and manufacturing technologies, (2) the second Company Objective described above, (3) advance the Company's biodefense efforts, and (4) expand the Company's research effort in finding new product candidates. In February of 2010, the CEO determined and the Compensation Committee concurred that Dr. Scannon had exceeded the first such objective and achieved his remaining objectives, except for the second Company Objective. Individual objectives for 2009 under the MICP for Mr. Kurland were: (1) the first Company Objective described above, (2) successfully resolve the threat of default under the Company's loan from Goldman Sachs, (3) reduce Company expenses, and (4) assure Company compliance with financial reporting and related requirements. In February of 2010, the CEO determined and the Compensation Committee concurred that Mr. Kurland had exceeded all such objectives. Individual objectives for 2009 under the MICP for Mr. Margolin were as follows: (1) the first, second and third Company Objectives described above and (2) advance the Company's antibody platform technologies. In February of 2010, the CEO determined and the Compensation Committee concurred that Mr. Margolin had exceeded all such objectives, except for the second Company Objective. Individual objectives for 2009 under the MICP for Mr. Wells were as follows: (1) develop and implement a workforce stabilization plan, (2) implement a succession planning process, (3) assess and align the Company's information technology strategy to reflect changes within the Company, and (4) strengthen cross-functional work processes and organizational capabilities within the Company. In February of 2010, the CEO determined and the Compensation Committee concurred that Mr. Wells had achieved all such objectives.

As to that portion of Mr. Engle's bonus based on a discretionary evaluation of the CEO's overall performance in 2009, the majority of the independent members of the Board determined to include 20% of Mr. Engle's target bonus amount as a portion of his bonus following consideration of, among other things, the factors described in the second preceding paragraph. In addition, the CEO determined and the Compensation Committee concurred to include between 15% and 20% of each other named executive officer's target bonus amount as the portion of such officer's bonus based on a discretionary evaluation.

The evaluation process and resulting determinations described above resulted in cash bonus payments under the CICP and the MICP to the executive officers named in the "Summary Compensation Table" below for 2009 as follows:

| | Base Salary | Target Bonus Percentage | Target Bonus Amount | Actual Bonus Percentage | Actual Bonus Amount |
|---|---|---|---|---|---|
| Steven B. Engle | $540,750 | 50 % | $ 270,375 | 48.5 % | $ 262,267 |
| Patrick J. Scannon M.D., Ph.D. | $389,340 | 30 % | $ 116,802 | 31.8 % | $ 123,811 |
| Fred Kurland | $310,000 | 30 % | $ 93,000 | 35.0 % | $ 108,655 |
| Christopher J. Margolin | $338,520 | 30 % | $ 101,556 | 33.9 % | $ 114,810 |
| Charles C. Wells | $304,500 | 30 % | $ 91,350 | 31.5 % | $ 95,918 |

Other Compensation. The Company maintains broad-based benefits and perquisites that are provided to all employees, including health insurance, life and disability insurance, vision and dental insurance, a 401(k) plan and temporary housing and other living expenses for relocated employees. The Company also maintains an Employee Share Purchase Plan, designed to give employees an opportunity to purchase Common shares through payroll deductions, thereby encouraging employees to share in the economic growth and success of the Company.

Tax Treatment. Section 162(m) of the Code generally limits the deductible amount of annual compensation paid to certain individual executive officers (i.e., the chief executive officer and the four other most highly compensated executive officers of the Company) to no more than $1 million. However, qualifying performance-based compensation will be excluded from the $1 million cap on deductibility, and the Compensation Committee believes, based on information currently available, that the Company's options issued to its executive officers qualify for this exclusion. Considering the current executive officer compensation and the availability of deferral opportunities, the

Compensation Committee and the Company believe that the Company will not be denied any significant tax deduction for 2009. The Company and the Compensation Committee will continue to review tax consequences as well as other relevant considerations in connection with compensation decisions.

Compensation Risk Assessment

We believe that risks arising from our compensation policies and practices for our employees are not reasonably likely to have a material adverse effect on our Company. We believe that our approach to goal-setting, setting of targets with payouts at multiple levels of performance, and evaluation of performance results assist in mitigating excessive risk-taking that could harm our value. We believe we have allocated our compensation among base salary and short- and long-term compensating target opportunities in such a way as not to encourage excessive risk-taking.

Summary Compensation Table

The following table sets forth certain summary information for the prior three years concerning the compensation earned by the Company's Chief Executive Officer, Chief Financial Officer, our three other most highly compensated officers who were named executive officers of the Company as of December 31, 2009. Information for 2008 and 2007 concerning Mr. Wells has been omitted in accordance with Securities and Exchange Commission ("SEC") rules because he was not a "named executive officer" during those years.

| Name and Principal Position | Year | Salary ($)(1) | Bonus ($)(2) | Stock Awards ($) | Option Awards ($)(3) | Non-Equity Incentive Plan Compensation ($)(4)(5) | Change in Pension Value and Nonqualified Deferred Compensation Earnings ($) | All Other Compensation ($)(6) | Total ($) |
|---|---|---|---|---|---|---|---|---|---|
| Steven B. Engle (Chairman of | 2009 | $540,750 | $0 | $0 | $212,280 | $ 262,267 | N/A | $ 38,725 | $1,054,022 |
| the Board, Chief Executive | 2008 | $515,000 | $0 | $0 | $243,787 | $ 0 | N/A | $ 390,489 | $1,149,276 |
| Officer and President) | 2007 | $202,760 | $50,000 | $0 | $4,572,830 | $ 112,472 | N/A | $ 36,980 | $4,975,042 |
| | | | | | | | | | |
| Patrick J. Scannon, M.D., Ph.D. | 2009 | $389,340 | $0 | $0 | $70,760 | $ 123,811 | N/A | $ 13,136 | $597,047 |
| (Executive Vice President and | 2008 | $370,800 | $0 | $0 | $86,680 | $ 0 | N/A | $ 17,045 | $474,525 |
| Chief Medical Officer) | 2007 | $360,000 | $0 | $0 | $461,248 | $ 115,631 | N/A | $ 17,269 | $954,148 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Fred Kurland (Vice President, | 2009 | $310,000 | $0 | $0 | $70,760 | $ 108,655 | N/A | $ 12,785 | $502,200 |
| Finance and Chief Financial | 2008 | $3,577 | N/A | N/A | $305,680 | $ 0 | N/A | $ 0 | $309,257 |
| Officer) | 2007 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Christopher J. Margolin (Vice | 2009 | $338,520 | $0 | $0 | $70,760 | $ 114,810 | N/A | $ 28,356 | $552,446 |
| President, General Counsel and | 2008 | $322,400 | $0 | $0 | $86,680 | $ 0 | N/A | $ 29,944 | $439,024 |
| Secretary) | 2007 | $310,000 | $0 | $0 | $367,646 | $ 110,033 | N/A | $ 29,890 | $817,569 |
| Charles C. Wells (Vice President, Human Resources and Information Technology) | 2009 | $304,500 | $0 | $0 | $70,760 | $ 95,918 | N/A | $ 11,568 | $482,746 |

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(1) Mr. Kurland was appointed to the position of Vice President, Finance and Chief Financial Officer effective December 28, 2008. The amount in this column representing his 2008 salary was earned in 2008 but paid in 2009.

(2) The amount in this column paid to Mr. Engle in 2007 represents a sign-on bonus. The bonus amounts paid to Mr. Engle under the Company's CICP and the amounts paid to Dr. Scannon and Messrs. Kurland, Margolin and Wells under the Company's MICP are represented in the amounts under Non-Equity Incentive Plan Compensation. CICP and MICP awards are reported on an earned basis.

(3) The amounts in this column do not reflect compensation actually received by the named executive officers but represent the aggregate grant date fair value for option awards calculated in accordance with FASB ASC Topic 718. Amounts for 2007 and 2008 have been recomputed under the same methodology in accordance with SEC rules. See Notes 2 and 9 of the consolidated financial statements in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2009 (the "2009 Form 10-K") regarding assumptions underlying valuation of equity awards.

(4) The amounts in this column for 2009 for Dr. Scannon and Messrs. Kurland, Margolin and Wells represent awards under the Company's MICP paid in 2010 relating to performance in 2009. There were no payouts under the MICP plan in 2009 for performance in 2008. The amounts in this column for 2007 for Dr. Scannon and Messrs. Margolin and Wells represent awards under the Company's MICP paid in 2008 relating to performance in 2007.

(5) The amount in this column for 2009 for Mr. Engle represents an award under the Company's CICP paid in 2010 relating to performance in 2009. There were no payouts under the CICP plan in 2009 for performance in 2008. The amount in this column for 2007 for Mr. Engle represents an award under the Company's CICP paid in 2008 relating to performance in 2007.

(6) Amounts in this column for 2009, 2008 and 2007 include:

Mr. Engle—(a) cash payments in lieu of earned vacation and/or personal holidays in the amount of $24,758 and $1,903 in 2009 and 2008, respectively; (b) relocation in the amounts of $241,954 and $20,080, in 2008 and 2007, respectively; (c) taxes paid by the Company on Mr. Engle's behalf in the amounts of $135,002 and $11,173, in 2008 and 2007, respectively; (d) Company Common Shares contributed to an account under the Company's Deferred Savings Plan in the amounts of 16,124, 15,203 and 1,377 Common Shares, respectively; (e) group term life insurance premiums in the amount of $2,966, $1,380 and $531, respectively; and (f) miscellaneous gifts in the amount of $509 in 2007.

Dr. Scannon—(a) cash payments in lieu of earned vacation and/or personal holidays in the amounts of $2,769 and $2,769, in 2008 and 2007, respectively; (b) Company Common Shares contributed to an account under the Company's Deferred Savings Plan in the amounts of 16,124, 15,203 and 3,011 Common Shares, respectively; (c) group term life insurance premiums in the amount of $2,136, $4,026 and $3,267, respectively; and (d) miscellaneous gifts in the amount of $983 in 2007.

Mr. Kurland—(a) Company Common Shares contributed to an account under the Company's Deferred Savings Plan in the amounts of 16,124 Common Shares in 2009; and (b) group term life insurance premiums in the amounts of $1,785 in 2009.

Mr. Margolin—(a) cash payments in lieu of earned vacation and/or personal holidays in the amounts of $15,499, $14,784 and $14,230, respectively; (b) Company Common Shares contributed to an account under the Company's Deferred Savings Plan in the amounts of 16,124, 15,203 and 3,011 Common Shares, respectively; (c) group term life insurance premiums in the amounts of $1,857, $4,910 and $3,386, respectively; and (d) miscellaneous gifts in the amount of $2,023 in 2007.

Amounts in this column for 2009 include:

Mr. Wells—(a) cash payments in lieu of earned vacation and/or personal holidays in the amount of $2,230; (b) Company Common Shares contributed to an account under the Company's Deferred Savings Plan in the amount of 11,240; and (c) group term life insurance premiums in the amount of $1,670.

Company Common Shares contributed under the Company's Deferred Savings Plan were valued in 2009, 2008 and 2007 at fiscal year-end formula prices of $0.6822. $0.6742 and $3.404, respectively, per share.

Grants of Plan-Based Awards

The following table contains information concerning the grant of awards to our named executive officers under any plan during 2009.

| Name | Grant Date | Estimated Future Payouts Under Non-Equity Incentive Plan Awards Threshold ($) | Target ($) | Maximum ($) | Estimated Future Payouts Under Equity Threshold ($) | Target ($) | Maximum ($) | All Other Stock Awards: Number of Shares of Stock or Units (#) | All Other Option Awards: Number of Securities Underlying Options (#) | Exercise or Base Price of Option Awards ($/Sh) | Grant Date Fair Value of Stock and Option Awards (1) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Steven B. Engle | 02-26-2009 | — | — | — | — | — | — | — | 600,000 | $0.56 | $212,280 |
| Patrick J. Scannon, M.D., Ph.D. | 02-26-2009 | — | — | — | — | — | — | — | 200,000 | $0.56 | $70,760 |
| Fred Kurland | 02-26-2009 | — | — | — | — | — | — | — | 200,000 | $0.56 | $70,760 |
| Christopher J. Margolin | 02-26-2009 | — | — | — | — | — | — | — | 200,000 | $0.56 | $70,760 |
| Charles C. Wells | 02-26-2009 | — | — | — | — | — | — | — | 200,000 | $0.56 | $70,760 |

(1) The grant date fair values were calculated in accordance with FASB ASC 718. See Notes 2 and 9 of the consolidated financial statements in the 2009 Form 10-K regarding assumptions underlying valuation of equity awards.

Outstanding Equity Awards as of December 31, 2009

The following table provides information as of December 31, 2009 regarding unexercised options and restricted common share awards held by each of our named executive officers.

| | Option Awards | | | | | Stock Awards | | | |
|---|---|---|---|---|---|---|---|---|---|
| Name | Number of Securities Underlying Unexercised Options (#) Exercisable (1) | Number of Securities Underlying Unexercised Options (#) Unexercisable | Equity Incentive Plan Awards: Number of Securities Underlying Unexercised Unearned Options (#) | Option Exercise Price ($) | Option Expiration Date | Number of Shares or Units of Stock That Have Not Vested (#) | Market Value of Shares or Units of Stock That Have Not Vested ($) | Equity Incentive Plan Awards: Number of Unearned Shares, Units or Other Rights That Have Not Vested (#) | Equity Incentive Plan Awards: Market or Payout Value of Unearned Shares, Units or Other Rights That Have Not Vested ($) |
| Steven B. Engle | 500,000 | 0 | 0 | $ 5.0000 | 08-03-2017 | 0 | 0 | 0 | 0 |
| | 1,225,001 | 874,999 | | $ 2.1700 | 08-03-2017 | | | | |
| | 812,500 | 687,500 | | $ 3.6700 | 10-31-2017 | | | | |
| | 103,125 | 121,875 | | $ 2.7100 | 02-21-2018 | | | | |
| | 125,000 | 475,000 | | $ 0.5600 | 02-26-2019 | | | | |
| Patrick J. Scannon, M.D., Ph.D. | 25,000 | 0 | 0 | $ 9.7500 | 02-23-2010 | 0 | 0 | 0 | 0 |
| | 25,000 | 0 | | $ 8.6250 | 02-21-2011 | | | | |
| | 25,000 | 0 | | $ 10.1600 | 02-20-2012 | | | | |
| | 30,000 | 0 | | $ 3.3300 | 02-26-2013 | | | | |
| | 30,000 | 0 | | $ 5.7700 | 02-25-2014 | | | | |
| | 30,000 | 0 | | $ 1.4000 | 02-23-2015 | | | | |
| | 28,750 | 1,250 | | $ 1.6800 | 02-28-2016 | | | | |
| | 28,333 | 11,667 | | $ 3.3900 | 02-21-2017 | | | | |
| | 216,667 | 183,333 | | $ 3.6700 | 10-31-2017 | | | | |
| | 36,667 | 43,333 | | $ 2.7100 | 02-21-2018 | | | | |
| | 41,667 | 158,333 | | $ 0.5600 | 02-26-2019 | | | | |
| Fred Kurland | 200,000 | 600,000 | 0 | $ 0.6200 | 12-29-2018 | 0 | 0 | 0 | 0 |
| | 41,667 | 158,333 | | $ 0.5600 | 02-26-2019 | | | | |
| Christopher J. Margolin | 25,000 | 0 | | $ 5.3125 | 01-21-2010 | | | | |
| | 25,000 | 0 | | $ 9.7500 | 02-23-2010 | | | | |
| | 25,000 | 0 | | $ 8.6250 | 02-21-2011 | | | | |
| | 25,000 | 0 | | $ 10.1600 | 02-20-2012 | | | | |
| | 40,000 | 0 | | $ 3.3300 | 02-26-2013 | | | | |
| | 10,000 | 0 | | $ 3.9200 | 04-10-2013 | | | | |
| | 30,000 | 0 | | $ 5.7700 | 02-25-2014 | | | | |
| | 30,000 | 0 | | $ 1.4000 | 02-23-2015 | | | | |
| | 25,000 | 0 | | $ 1.7800 | 10-25-2015 | | | | |
| | 28,750 | 1,250 | | $ 1.6800 | 02-28-2016 | | | | |
| | 28,333 | 11,667 | | $ 3.3900 | 02-21-2017 | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 15,000 | 0 | | $ 3.6700 | 10-31-2017 | | | | |
| | 143,542 | 121,458 | | $ 3.6700 | 10-31-2017 | | | | |
| | 36,667 | 43,333 | | $ 2.7100 | 02-21-2018 | | | | |
| | 41,667 | 158,333 | | $ 0.5600 | 02-26-2019 | | | | |
| Charles C. Wells | 50,000 | 0 | 0 | $ 10.4500 | 05-07-2011 | 0 | 0 | 0 | 0 |
| | 25,000 | 0 | | $ 10.1600 | 02-20-2012 | | | | |
| | 30,000 | 0 | | $ 3.3300 | 02-26-2013 | | | | |
| | 30,000 | 0 | | $ 5.7700 | 02-25-2014 | | | | |
| | 30,000 | 0 | | $ 1.4000 | 02-23-2015 | | | | |
| | 28,750 | 1,250 | | $ 1.6800 | 02-28-2016 | | | | |
| | 28,333 | 11,667 | | $ 3.3900 | 02-21-2017 | | | | |
| | 162,500 | 137,500 | | $ 3.6700 | 10-31-2017 | | | | |
| | 36,667 | 43,333 | | $ 2.7100 | 02-21-2018 | | | | |
| | 41,667 | 158,333 | | $ 0.5600 | 02-26-2019 | | | | |

Option Exercises and Shares Vested

The following table sets forth the number of Common Shares acquired upon exercise of options by each named executive officer during 2009 and the number of share awards held by each named executive officer that vested during 2009.

| | Option Awards | | Stock Awards | |
|---|---|---|---|---|
| Name | Number of Shares Acquired On Exercise (#) | Value Realized on Exercise ($) | Number of Shares Acquired On Vesting (#) | Value Realized on Vesting ($) |
| Steven B. Engle | 0 | $0 | 0 | $0 |
| Patrick J. Scannon M.D., Ph.D. | 0 | $0 | 0 | $0 |
| Fred Kurland | 0 | $0 | 0 | $0 |
| Christopher J. Margolin | 0 | $0 | 0 | $0 |
| Charles C. Wells | 0 | $0 | 0 | $0 |

Pension Benefits

None of our named executive officers are covered by a pension plan or other similar benefit plan that provides for payments or other benefits at, following, or in connection with retirement.

Non-Qualified Deferred Compensation

None of our named executive officers are covered by a defined contribution or other plan that provides for the deferral of compensation on a basis that is not tax-qualified.

Employment Contracts and Termination of Employment and Change of Control Arrangements

The Company has entered into an employment agreement with Mr. Engle, dated as of December 30, 2008, that provides for Mr. Engle’s employment as CEO and President at a salary of not less than $515,000 per year. Under the employment agreement, Mr. Engle is entitled to participate in any benefit plan for which key executives of the Company are eligible, including the CICP. Upon termination of his employment for any reason other than cause or upon his resignation for good reason, Mr. Engle will be entitled to one and one-half times his then current base salary and pro-rated target bonus for the then current fiscal year and benefits for eighteen (18) months, as well as outplacement services for twelve (12) months not to exceed $15,000 in value. The employment agreement will continue for one year and will be automatically extended (without further action by the parties) for one year thereafter and again on each subsequent anniversary thereof, unless notice of non-extension of the term is given by either party.

The Company has entered into an employment agreement with Dr. Scannon, dated as of December 30, 2008, that provides for his employment as Executive Vice President and Chief Medical Officer at a salary of not less than $360,000 per year. Under the agreement, Dr. Scannon is entitled to participate in any benefit plan for which key executives of the Company are eligible, including the MICP. Upon termination of his employment by the Company for any reason other than cause or upon his resignation from the Company for good reason, Dr. Scannon will be entitled to his then current base salary, pro-rated target bonus and benefits for nine (9) months, as well as outplacement services for six (6) months not to exceed $8,000 in value. The agreement will continue for one year and will be automatically extended (without further action by the parties) for one year thereafter and again on each subsequent anniversary thereof, unless terminated by mutual written consent of the parties.

The Company has entered into an employment agreement with Mr. Kurland, dated as of December 28, 2008, that provides for his employment as Vice President, Finance and Chief Financial Officer at a salary of not less than $310,000 per year. Under the agreement, Mr. Kurland will be entitled to participate in any benefit plan for which key executives of the Company are eligible, including the MICP. Upon termination of his employment by the Company for any reason other than cause or upon his resignation from the Company for good reason, Mr. Kurland will be entitled to his then current base salary, pro-rated target bonus and benefits for nine (9) months, as well as outplacement services for six (6) months not to exceed $8,000 in value. The agreement will continue for one year and will be automatically extended (without further action by the parties) for one year thereafter and again on each subsequent anniversary thereof, unless terminated by mutual written consent of the parties.

The Company has entered into an employment agreement with Mr. Margolin, dated as of December 30, 2008, that provides for his employment as Vice President, General Counsel and Secretary at a salary of not less than $310,000 per year. Under the agreement, Mr. Margolin will be entitled to participate in any benefit plan for which key executives of the Company are eligible, including the MICP. Upon termination of his employment by the Company for any reason other than cause or upon his resignation from the Company for good reason, Mr. Margolin will be entitled to his then current base salary, pro-rated target bonus and benefits for nine (9) months, as well as outplacement services for six (6) months not to exceed $8,000 in value. The agreement will continue for one year and will be automatically extended (without further action by the parties) for one year thereafter and again on each subsequent anniversary thereof, unless terminated by mutual written consent of the parties.

The Company has entered into an employment agreement with Mr. Wells, effective as of December 30, 2008, that provides for his employment as Vice President, Human Resources and Information Technology at a salary of not less than $280,000 per year. Under the agreement, Mr. Wells is entitled to participate in any benefit plan for which key executives of the Company are eligible, including the MICP. Upon termination of his employment by the Company for any reason other than cause or upon his resignation from the Company for good reason, Mr. Wells will be entitled to his then current base salary, pro-rated target bonus and benefits for nine (9) months, as well as outplacement services for six (6) months not to exceed $8,000 in value. The agreement will continue for one year and will be automatically extended (without further action by the parties) for one year thereafter and again on each subsequent anniversary thereof, unless terminated by mutual written consent of the parties.

Certain Other Payments Upon a Change of Control

Named Executive Officers. Each of our named executive officers has entered into change of control severance agreements (the "Change of Control Agreements") that may require us to make certain payments and/or provide certain benefits to certain executive officers in the event of a termination of employment or a change of control.

Change of Control. A “change of control” is defined in the Change of Control Agreements as the occurrence of any of the following events: (i) a merger, amalgamation or acquisition in which the Company is not the surviving or continuing entity, except for a transaction the principal purpose of which is to change the jurisdiction of the Company’s organization; (ii) the sale, transfer or other disposition of all or substantially all of the assets of the Company; (iii) any other reorganization or business combination in which fifty percent (50%) or more of the Company’s outstanding voting securities are transferred to different holders in a single transaction or series of related transactions; (iv) any approval by the shareholders of the Company of a plan of complete liquidation of the Company; (v) any “person” (as such term is used in Sections 13(d) and 14(d) of the Securities Exchange Act of 1934, as amended) becoming the “beneficial owner” (as defined in Rule 13d-3 under said Act), directly or indirectly, of securities of the Company representing more than fifty percent (50%) of the total voting power represented by the Company’s then outstanding voting securities; or (vi) a change in the composition of the Board, as a result of which fewer than a majority of the directors are incumbent directors.

Vesting of Options. If a named executive officer’s employment is involuntarily terminated within eighteen (18) months of a change of control, the exercisability of all options granted to such named executive officer by the Company shall automatically be accelerated so that all the options may be exercised immediately upon such involuntary termination for any or all of the shares subject thereto and the post-termination exercise period shall be extended to sixty (60) months or the remainder of the maximum term of the options (or such shorter period of time to avoid the application of Section 409A of the Code). The options shall continue to be subject to all other terms and conditions of the Company’s share option plans and the applicable option agreements between the employee and the Company.

Outplacement Program. If a named executive officer’s employment is involuntarily terminated within eighteen (18) months of a change of control, the named executive officer will immediately become entitled to participate in a twelve (12) month executive outplacement program provided by an executive outplacement service, at the Company’s expense not to exceed $15,000.

Cash Severance. If a named executive officer’s employment is involuntarily terminated within eighteen (18) months of a change of control, then the named executive officer shall be entitled to receive a severance payment equal to the sum of (A) an amount equal to 1.5 times (or, in the case of Mr. Engle, 2.0 times) the named executive officer’s annual base salary as in effect immediately prior to the involuntary termination, plus (B) an amount equal to 1.5 times (or, in the case of Mr. Engle, 2.0 times) the named executive officer’s target bonus as in effect for the fiscal year in which the involuntary termination occurs.

Health and Other Benefits. If a named executive officer’s employment is involuntarily terminated within eighteen (18) months of a change of control, then for a period of eighteen (18) months (or, in the case of Mr. Engle, twenty-four (24) months) following such termination, (A) the Company shall make available and pay for the full cost of the coverage (plus an additional amount to pay for the taxes on such payments, if any, plus any taxes on such additional amount) of the named executive officer and his or her spouse and eligible dependents under any group health plans of the Company on the date of such termination of employment at the same level of health (i.e., medical, vision and dental) coverage and benefits as in effect for the named executive officer or such covered dependents on the date immediately preceding the date of his or her termination and (B) if the named executive officer is, at the time of such termination, an eligible participant in the Company’s mortgage differential program, the Company shall continue to make mortgage assistance payments to such named executive officer pursuant to such program as in effect at the time of such termination.

Compensation Committee Report on Executivet-variant: normal;">28,655,372

22,664,076

8,067,939

5,830,667

Total long-term obligations

13,433,874

15,348,310

10,923,162

4,125,915

2,753,595

(1) We acquired SolarCity Corporation ("SolarCity") on November 21, 2016. SolarCity's financial positions have been included in our financial positions from the acquisition date. See Note 3, Business Combinations, of the notes to the consolidated financial statements for additional information regarding this transaction.

(2) Includes the impact of the adoption of the new revenue recognition accounting standard in 2018. Prior periods have not been revised. See Note 2, Summary of Significant Accounting Policies, of the notes to the consolidated financial statements for further details.

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

The following discussion and analysis should be read in conjunction with the consolidated financial statements and the related notes included elsewhere in this Annual Report on Form 10-K.

### Overview and 2018 Highlights

Our mission is to accelerate the world's transition to sustainable energy. We design, develop, manufacture, lease and sell high-performance fully electric vehicles, solar energy generation systems and energy storage products. We also offer maintenance, installation, operation and other services related to our products.

### Automotive

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

In 2018, we continued to scale our automotive operations, particularly our ramp of Model 3, and achieved total production of 254,530 vehicles and delivered 245,506 vehicles, representing year-over-year increases of approximately 152% and 138%, respectively.

### Energy Generation and Storage

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

During 2018, we deployed 1.04 GWh of energy storage products, nearly tripling our 358 MWh of energy storage deployments during 2017. We also deployed 326 megawatts ("MW") of solar energy generation during 2018.

### Management Opportunities, Challenges and Risks and 2019 Outlook

### Automotive Demand, Production and Deliveries

Our goal is to produce the world's highest quality vehicles as quickly and as cost-effectively as possible with a priority on workplace health and safety. The worldwide automotive markets for alternative fuel vehicles and self-driving technology are highly competitive and we expect them to become even more so. A growing number of companies, including established automakers, have announced plans to expand, and in some cases fully transition to, production of electric or environmentally friendly vehicles, and/or to develop self-driving technologies. However, we believe that the unique features of our vehicles, the safety aspects of each of our vehicles, our constant innovation, our growing brand, the increased affordability introduced with Model 3, the innovation and expansion of our global retail, service and charging operations and infrastructure and our future vehicles will continue to generate incremental demand for our vehicles by making our vehicles accessible to larger and previously untapped consumer and commercial markets.

Model 3 was the best-selling premium vehicle in the United States in 2018. Vehicles traded in to us by Model 3 customers continue to suggest the existence of a wider addressable market for this vehicle than existing owners of mid-sized premium sedans. Moreover, as we have offered only the long-range, mid-range and performance variants of Model 3 thus far, we believe that we will see increased demand with the introduction of less expensive variants, such as a version with a base price of $35,000 that we intend to offer in the future, and additional financing options. We commenced in January 2019 production of Model 3 for Europe and China, each of which we believe has a much larger mid-sized premium sedan market than North America, where we have exclusively delivered Model 3 to date. We also believe that we have an advantage over our competitors with respect to our battery and powertrain technology, as our vehicles' EPA-rated range per kWh is expected to be superior to that of other electric vehicles to be introduced in the near term, and we have the ability to improve our vehicles through over-the-air software updates. We are producing variants (including regional versions) of Model 3 in accordance with the demand that we expect for them, however, and we have finite production capabilities with long lead times associated with procuring certain parts. If our Model 3 demand expectations prove inaccurate or we experience delays in introducing planned additional variants, including as we begin offering Model 3 in new markets, we may not be able to timely generate sales matched to the specific vehicles that we have the capacity to produce. We may also be impacted by trade policies, political uncertainty and economic cycles involving geographic regions where we have significant operations. Sales of vehicles in the automotive industry also tend to be cyclical in many markets, which may expose us to increased volatility as we expand and adjust our operations and retail strategies. In addition, the federal tax credit for the purchase of a qualified electric vehicle in the U.S. was reduced to $3,750 for any Tesla vehicle delivered during the first or second quarter of 2019, and will be further reduced to $1,875 for each Tesla vehicle delivered in the third or fourth quarter of 2019 and to $0 for each Tesla vehicle delivered thereafter. We believe that this phase-out likely pulled forward some vehicle demand into 2018 and could create similar pull-forwards in 2019 before each further step reduction in the federal tax credit. In the long run, we do not expect a meaningful impact to our sales in the U.S., as we believe that each of our vehicle models offers a compelling proposition even without incentives. Globally, we are also working to, and in some cases have already begun to, increase the value proposition and affordability of our offerings to customers and offer other financing arrangements over time. For example, we intend to introduce leasing options for Model 3.

Our Model 3 production ramped dramatically during 2018, and we expect to continue to grow Model 3 production to a sustained rate of 7,000 vehicles per week at our Tesla Factory by the end of 2019 as we ramp international deliveries.  We remain focused on further cost improvements and on increasing the affordability of Model 3. Furthermore, in January 2019 we commenced construction of our Gigafactory Shanghai in China. We expect to build a production process that is optimized and simplified for Model 3 production, comprised of stamping, body joining and paint shops and general assembly, at Gigafactory Shanghai to begin production of certain trims of Model 3 for China by the end of 2019. We believe that the efficiencies of local production, as well as avoiding certain tariffs on U.S.-manufactured vehicles, will allow us to offer Model 3 at a lower average selling price in the largest market for electric vehicles in the world. Inclusive of Gigafactory Shanghai, our goal is to be able to produce 10,000 Model 3 vehicles per week on a sustained basis, and an annualized output rate in excess of 500,000 Model 3 vehicles sometime between the fourth quarter of 2019 and the second quarter of 2020. However, the timeframe for Gigafactory Shanghai is subject to a number of uncertainties, including regulatory approval, supply chain constraints, and the pace of installing production equipment and bringing the factory online. Ultimately, achieving increased Model 3 production cost-effectively will require that we timely address any additional bottlenecks that may arise as we continue to ramp, and establish sustained supplier capacity, including locally at Gigafactory Shanghai.

We also recently discontinued new custom orders for the 75 kWh versions of Model S and Model X to focus on longer range versions of our highest-performance flagship vehicles and further differentiate them from Model 3. We have gradually increased the level of option standardization across these models, and this latest step and our increasing production efficiency have allowed us to reduce the production hours for them while preserving the flexibility to increase output as necessary. As Model S and Model X are produced in the U.S., for the foreseeable future we could be impacted by increased import duties on components sourced from China, as well as by tariffs on vehicles exported to China, although we intend to partially divert such deliveries to North America and Europe, if necessary.

Advancing our customer-facing infrastructure remains a top priority. Delivering vehicles to our customers and the related logistics were challenging during 2018, but we continue to improve these processes to maximize customer satisfaction, including by purchasing our own car-hauling trucks. We are also expanding our servicing capabilities for our rapidly growing customer vehicle fleet, including by growing our service locations and Mobile Service fleet, moving to two-shift operations at service centers where needed, and optimizing our parts distribution network. We are also updating the Tesla mobile app for scheduling service appointments in order to increase customer convenience. As sales of Tesla vehicles ramp further, we plan to continue to open new Tesla retail locations, service centers and body shops around the world, and we plan to continue to expand our Mobile Service fleet. We also plan to continue to significantly increase the number of Superchargers and Destination Charging connectors globally, as well as evolve our Supercharger technology to enable faster charging times while reducing our related costs. However, we will have to stabilize and sustain our delivery and logistics model to deliver an increasing number of vehicles, and we have only limited experience with this at scale, particularly in markets outside of North America. Moreover, if our growing fleet of customer vehicles, particularly Model 3, experiences unexpected reliability issues, it could overburden our servicing capabilities.

Finally, we are making progress with our self-driving technology, as well as the Autopilot features in our vehicles. Our neural net and functionality continue to improve, and we frequently release minor software updates and from time to time release key version updates. Recently, we launched a “Navigate on Autopilot” feature that allows enabled Tesla vehicles under appropriate circumstances and driver input to change lanes, transition between freeways and exit freeways. While we are subject to regulatory constraints over which we have no control, our ultimate goal is to achieve full autonomy. Additionally, there is growing competition from other automobile and technology companies in the area of self-driving.

Energy Generation and Storage Demand, Production and Deployment

We are continuing to reduce customer acquisition costs of our energy generation products, transitioning away from former channel partners and shifting our sales strategy significantly to sell these products in Tesla stores and on our website and through cross-selling opportunities to our expanding base of vehicle owners. As we continue to implement this strategy, we expect that our retrofit solar system deployments will decrease slightly before stabilizing and growing in the second half of the year, including through cross-selling opportunities to our expanding base of vehicle owners. Our emphasis for retrofit solar products remains on executing projects for upfront cash generation and profitability, rather than absolute volume growth, such as by reducing the mix of leased systems and prioritizing residential installations that are combined with our energy storage products.

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

We expect our energy storage products to continue to experience significant growth, and we are targeting to more than double our deployments to over 2 GWh in 2019. We see opportunities in North America as well as in Australia and Europe, where energy storage coupled with solar generation may mitigate typically higher electricity rates, as well as for projects to increase energy grid reliability. We are continuing to ramp production for these products at Gigafactory 1, including through a new production line, and we have seen further manufacturing efficiencies and improvements in our installation processes as we ramp.

Trends in Cash Flow, Capital Expenditures and Operating Expenses

Capital expenditures in 2019 are projected to be approximately $2.5 billion, mostly to support increases in Model 3 production capacity at Gigafactory 1 and the Tesla Factory, the establishment of Model 3 production capacity at Gigafactory Shanghai, and the addition of manufacturing capacity for Model Y, which we intend to produce in volume by the end of 2020, as well as the ongoing expansion of our retail locations, service centers, body shops, Mobile Service fleet, and Supercharger stations.

Generally, we expect operating expenses as a percentage of revenue to continue to decrease in the future due to increases in expected revenues and as we focus on increasing operational efficiency. In addition, due to our cost management efforts to maximize operational efficiency, we expect operating expenses in 2019 to grow by less than 10% from 2018.

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

Automotive Financing Options

We offer financing arrangements for our vehicles in certain markets in North America, Europe and Asia primarily through various financial institutions. We offer resale value guarantees or similar buy-back terms to certain customers who purchase vehicles and who finance their vehicles through one of our specified commercial banking partners. We also offer resale value guarantees in connection with automotive sales to certain leasing partners. Currently, both programs are available only in certain international markets. Resale value guarantees available for exercise within the 12 months following December 31, 2018 totaled $149.7 million in value.

We have adopted the new revenue recognition standard ASC 606 effective January 1, 2018. This impacts the way we account for vehicle sales with a resale value guarantee and vehicles leased through our leasing partners, which now generally qualify to be accounted for as sales with a right of return. In addition, for certain vehicles sales with a resale value guarantee and vehicles leased through leasing partners prior to 2018, we have ceased recognizing lease revenue starting in 2018 and record the associated cumulative adjustment to equity under the modified retrospective approach.

Vehicle deliveries with the resale value guarantee do not impact our near-term cash flows and liquidity, since we receive the full amount of cash for the vehicle sales price at delivery. While we do not assume any credit risk related to the customer, if a customer exercises the option to return the vehicle to us, we are exposed to liquidity risk that the resale value of vehicles under these programs may be lower than our guarantee, or the volume of vehicles returned to us may be higher than our estimates or we may be unable to resell the used vehicles in a timely manner, all of which could adversely impact our cash flows. To date, we have only had an insignificant number of customers who exercised their resale value guarantees and returned their vehicles to us. Based on current market demand for our vehicles, we estimate the resale prices for our vehicles will continue to be above our resale value guarantee amounts, but resale prices may inherently fluctuate depending on various factors such as supply and demand of our used vehicles, economic cycles and the pricing of new vehicles. Should market values of our vehicles or customer demand decrease, these estimates may be impacted materially.

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

Energy Generation and Storage Financing Options

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

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

Gigafactory 1

We continue to develop Gigafactory 1 as a facility where we work together with our suppliers to integrate production of battery material, cells, modules, battery packs and drive units in one location for vehicles and energy storage products. We also continue to invest in the future expansion of Gigafactory 1 and in additional production capacity there. For example, we have announced that we will likely manufacture Model Y at Gigafactory 1.

Panasonic has partnered with us on Gigafactory 1 with investments in the production equipment that it uses to manufacture and supply us with battery cells. Under our arrangement with Panasonic, we plan to purchase the full output from their production equipment at negotiated prices. As these terms convey to us the right to use, as defined in ASC 840, Leases, their production equipment, we consider them to be leased assets when production commences. This results in us recording the value of their production equipment within property, plant and equipment, net, on the consolidated balance sheets with a corresponding liability recorded to financing obligations. For all suppliers and partners for which we plan to purchase the full output from their production equipment located at Gigafactory 1, we will apply similar accounting. During the year ended December 31, 2018, we recorded $766.6 million on the consolidated balance sheet.

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

Gigafactory 2

We have an agreement with the SUNY Foundation for the construction of a factory with the intended capacity to produce at least 1.0 GW of solar products annually in Buffalo, New York, referred to as Gigafactory 2. In December 2016, we entered into an agreement with Panasonic under which it manufactures custom PV cells and modules for us, primarily at Gigafactory 2, and we purchase certain quantities of PV cells and modules from Panasonic during the 10-year term.

The terms of our agreement with the SUNY Foundation require us to comply with a number of covenants, and any failure to comply with these covenants could obligate us to pay significant amounts to the SUNY Foundation and result in termination of the agreement. Although we remain on track with our progress at Gigafactory 2, our expectations as to the cost of building the facility, acquiring manufacturing equipment and supporting our manufacturing operations may prove incorrect, which could subject us to significant expenses to achieve the desired benefits.

Gigafactory Shanghai

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

Other Manufacturing

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

Critical Accounting Policies and Estimates

The consolidated financial statements are prepared in accordance with accounting principles generally accepted in the U.S. (“GAAP”). The preparation of the consolidated financial statements requires us to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues, costs and expenses and related disclosures. We base our estimates on historical experience, as appropriate, and on various other assumptions that we believe to be reasonable under the circumstances. Changes in the accounting estimates are reasonably likely to occur from period to period. Accordingly, actual results could differ significantly from the estimates made by our management. We evaluate our estimates and assumptions on an ongoing basis. To the extent that there are material differences between these estimates and actual results, our future financial statement presentation, financial condition, results of operations and cash flows will be affected. We believe that the following critical accounting policies involve a greater degree of judgment and complexity than our other accounting policies. Accordingly, these are the policies we believe are the most critical to understanding and evaluating the consolidated financial condition and results of operations.

Revenue Recognition

Adoption of new revenue standard

On January 1, 2018, we adopted ASC 606, Revenue from Contracts with Customers, (“new revenue standard”) using the modified retrospective method. The new revenue standard had a material impact in our consolidated financial statements. For further discussion, refer to Note 2, Summary of Significant Accounting Policies, to the consolidated financial statements included elsewhere in this Annual Report on Form 10-K.

Automotive Segment

Automotive Sales Revenue

Automotive Sales without Resale Value Guarantee

Automotive sales revenue includes revenues related to deliveries of new vehicles, 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 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 full self-driving 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 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, full self-driving 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

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 now 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. 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, 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.

Automotive Regulatory Credits

California and certain other states have laws in place requiring vehicle manufacturers to ensure that a portion of the vehicles delivered for sale in that state during each model year are zero-emission vehicles. These laws and regulations provide that a manufacturer of zero-emission vehicles may earn regulatory credits ("ZEV credits") and may sell excess credits to other manufacturers who apply such credits to comply with these regulatory requirements. Similar regulations exist at the federal level that require compliance related to greenhouse gas ("GHG") emissions and also allow for the sale of excess credits by one manufacturer to other manufacturers. As a manufacturer solely of zero-emission vehicles, we have earned emission credits, such as ZEV and GHG credits, on our vehicles, and we expect to continue to earn these credits in the future. We enter into contractual agreements with third-parties to purchase our regulatory 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 regulatory credits at the time control of the regulatory credits is transferred to the purchasing party as automotive revenue in the consolidated statement of operations.

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 certain locations in the U.S., Canada and Europe. Currently, the direct vehicle leasing program is only offered for new leases to qualified customers in the U.S. and 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 have the option of either returning the vehicle to us or purchasing it 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.

We capitalize shipping costs and initial direct costs such as the incremental cost of contract administration, 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.

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 to 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 continue to be accounted for as interest bearing collateralized borrowings in accordance with ASC 840, Leases. 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 deposit 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. We capitalize vehicles under this program to operating lease vehicles, net, on the consolidated balance sheet, 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 statement 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. 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.

On a quarterly basis, we assess the estimated market values of vehicles under our buyback options program to determine if we have sustained a loss on any of these contracts. 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, although we have not experienced any material losses during any period to date.

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 sheet to used vehicle inventory.

Services and Other Revenue

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

Energy Generation and Storage Segment

Energy Generation and Storage Sales

Energy generation and storage revenues consists of the sale of solar energy systems and energy storage systems to residential, small commercial, and large commercial and utility grade customers. 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 accepted by the customer. 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 percentage of completion method based on cost incurred as a percentage of total estimated contract costs. 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 percentage of completion method does not apply, revenue is recognized when control transfers, which is when the product has been delivered to the customer 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. 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.

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, 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. 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.

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We capitalize initial direct costs from the origination of solar energy system leases or PPAs, which include the incremental cost of contract administration, referral fees and sales commissions, as an element of solar energy systems, leased and to be leased, net, and subsequently amortize these costs over the term of the related lease or PPA.

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 on 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.

Warranties

We provide a manufacturer's warranty on all new and used vehicles, production powertrain components and systems and energy storage products we sell. In addition, we also provide a warranty on the installation and components of the solar energy systems we sell for periods typically between 10 to 30 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 sheet. Due to the adoption of the new revenue standard, automotive sales with resale value guarantees that were previously recorded within operating lease assets require a corresponding warranty accrual. Warranty expense is recorded as a component of cost of revenues in the consolidated statements of operations.

Stock-Based Compensation

We use the fair value method of accounting for our stock options and restricted stock units ("RSUs") granted to employees and our employee stock purchase plan (the "ESPP") to measure the cost of employee services received in exchange for the stock-based awards. The fair value of stock option awards with only service conditions and ESPP is estimated on the grant or offering date using the Black-Scholes option-pricing model. The Black-Scholes option-pricing model requires inputs such as the risk-free interest rate, expected term and expected volatility. These inputs are subjective and generally require significant judgment. The fair value of RSUs is measured on the grant date based on the closing fair market value of our common stock. The resulting cost is recognized over the period during which an employee is required to provide service in exchange for the awards, usually the vesting period, which is generally four years for stock options and RSUs and six months for the ESPP. Stock-based compensation expense is recognized on a straight-line basis, net of actual forfeitures in the period (prior to 2017, net of estimated projected forfeitures).

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 is recognized for each pair of performance and market conditions over the longer of the expected achievement period of the performance and market conditions, beginning at the point in time that the relevant performance condition is considered probable of achievement. The fair value of such awards is estimated on the grant date using Monte Carlo simulations.

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

Income Taxes

We are subject to federal and state taxes in the U.S. and in many foreign jurisdictions. Significant judgment is required in determining our provision for income taxes, our deferred tax assets and liabilities and any valuation allowance recorded against our net deferred tax assets. We make these estimates and judgments about our future taxable income that are based on assumptions that are consistent with our future plans. Tax laws, regulations, and administrative practices may be subject to change due to economic or political conditions including fundamental changes to the tax laws applicable to corporate multinationals. The U.S., many countries in the European Union and a number of other countries are actively considering changes in this regard. As of December 31, 2018, we had recorded a full valuation allowance on our net U.S. deferred tax assets because we expect that it is more likely than not that our U.S. deferred tax assets will not be realized in the foreseeable future. Should the actual amounts differ from our estimates, the amount of our valuation allowance could be materially impacted.

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

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.

In December 2017, the Securities and Exchange Commission staff issued Staff Accounting Bulletin No. 118, Income Tax Accounting Implications of the Tax Cuts and Jobs Act (“SAB 118”), which allowed us to record provisional amounts during a measurement period not to extend beyond one year from the enactment date. As such, in accordance with SAB 118, we completed our analysis during the fourth quarter of 2018 considering current legislation and guidance resulting in no material adjustments from the provisional amounts recorded during the prior year.

Principles of Consolidation

The consolidated financial statements reflect our accounts and operations and those of our subsidiaries in which we have a controlling financial interest. In accordance with the provisions of ASC 810, Consolidation, we consolidate any variable interest entity (“VIE”) of which we are the primary beneficiary. We form VIEs with our financing fund investors in the ordinary course of business in order to facilitate the funding and monetization of certain attributes associated with our 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 a number of VIEs. 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.

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.

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.

When determining such fair values, we make significant estimates and assumptions. Critical estimates include, but are not limited to, future expected cash flows from the underlying assets and discount rates. Our estimate of fair values is based on assumptions believed to be reasonable but that are inherently uncertain and unpredictable. As a result, actual results may differ from our estimates. Furthermore, our estimates might change as additional information becomes available, as more fully discussed in Note 3, Business Combinations, included elsewhere in this Annual Report on Form 10-K.

Results of Operations

Revenues

| | Year Ended December 31, | | | 2018 vs. 2017 Change | | 2017 vs. 2016 Change | |
|---|---|---|---|---|---|---|---|
| (Dollars in thousands) | 2018 | 2017 | 2016 | $ | % | $ | % |
| Automotive sales | $17,631,522 | $8,534,752 | $5,589,007 | $9,096,770 | 107% | $2,945,745 | 53 % |
| Automotive leasing | 883,461 | 1,106,548 | 761,759 | (223,087 ) | -20 % | 344,789 | 45 % |
| Total automotive revenues | 18,514,983 | 9,641,300 | 6,350,766 | 8,873,683 | 92 % | 3,290,534 | 52 % |
| Services and other | 1,391,041 | 1,001,185 | 467,972 | 389,856 | 39 % | 533,213 | 114% |
| Total automotive & services and other segment revenue | 19,906,024 | 10,642,485 | 6,818,738 | 9,263,539 | 87 % | 3,823,747 | 56 % |
| Energy generation and storage segment revenue | 1,555,244 | 1,116,266 | 181,394 | 438,978 | 39 % | 934,872 | 515% |
| Total revenues | $21,461,268 | $11,758,751 | $7,000,132 | $9,702,517 | 83 % | $4,758,619 | 68 % |

Automotive & Services and Other Segment

Automotive sales revenue includes revenues related to sale of new Model S, Model X and Model 3 vehicles, including access to our Supercharger network, internet connectivity, Autopilot, full self-driving and over-the-air software updates, as well as sales of regulatory credits to other automotive manufacturers. Our revenue from non-ZEV regulatory credits generally follows our production and delivery trends as we have long-term contracts with existing customers for the sale of these credits. However, as we do not have long-term contracts for ZEV credit sales, revenue from sale of ZEV credits fluctuate by quarter depending on when a contract is executed with a buyer. For example, our revenue from ZEV credit sales in the three months ended December 31, 2017 was $179.1 million while it was $0 in the three months ended June 30, 2018.

Automotive leasing revenue includes the amortization of revenue for Model S and Model X vehicles under direct lease agreements as well as those sold with resale value guarantees accounted for as operating leases under lease accounting. We do not yet offer leasing for Model 3 vehicles.

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

2018 Compared to 2017

Automotive sales revenue increased $9.10 billion, or 107%, in the year ended December 31, 2018 as compared to the year ended December 31, 2017, primarily due to an increase of approximately 144,330 Model 3 deliveries from our significant production ramp in the year ended December 31, 2018, delivered at average selling prices that remained relatively consistent year-over-year. Additionally, we recognized $1.40 billion of additional automotive sales revenue due to the adoption of the new revenue standard and an increase of $58.3 million in sales of regulatory credits to $418.6 million in the year ended December 31, 2018. ZEV credits sales were $103.4 million and non-ZEV regulatory credits sales were $315.2 million in the year ended December 31, 2018, compared to $279.7 million ZEV credit sales and $80.6 million in non-ZEV regulatory credit sales in the year ended December 31, 2017. The growth in non-ZEV regulatory credits year-over-year was generally consistent with the delivery volume growth. The above increases in revenue were offset by a decrease of approximately 3,240 Model S and Model X deliveries during the year ended December 31, 2018, excluding the impact of adoption of the new revenue standard, at average selling prices that remained relatively consistent as compared to the year ended December 31, 2017.

Automotive leasing revenue decreased $223.1 million, or 20%, in the year ended December 31, 2018 as compared to the year ended December 31, 2017. The decrease was primarily due to a downward adjustment of $832.7 million from the adoption of the new revenue standard, partially offset by an increase in cumulative vehicles under our direct vehicle leasing program and an increase in the number of vehicles under leasing programs where our counterparty has retained ownership of the vehicle during or at the end of the guarantee period when compared to the year ended December 31, 2017. When our counterparty retains ownership, any remaining balances within deferred revenue and resale value guarantee are settled to automotive leasing revenue.

Services and other revenue increased $389.9 million, or 39%, in the year ended December 31, 2018 as compared to the year ended December 31, 2017. The increase was primarily due to an increase in used vehicle sales from an increased volume of trade-in vehicles, partially offset by lower average selling prices for used vehicles sales due to an increase in trade-ins of relatively lower priced non-Tesla vehicles in the year ended December 31, 2018. Additionally, there was an increase in non-warranty maintenance services revenue as our fleet continues to grow. These increases were partially offset by a decrease in powertrain sales to another automobile manufacturer as we wound down the program in 2017.

2017 Compared to 2016

Automotive sales revenue increased $2.95 billion, or 53%, in the year ended December 31, 2017 compared to the year ended December 31, 2016, primarily related to a 58% increase in deliveries to 80,060 vehicles resulting from increased sales of Model S and Model X, at average selling prices that remained relatively consistent as compared to the prior period, as well as sales of 1,764 Model 3 vehicles since its launch in the third quarter of 2017. Additionally, sales of regulatory credits increased by $58.0 million to $360.3 million in the year ended December 31, 2017. ZEV credits sales were $279.7 million and non-ZEV regulatory credits sales were $80.6 million in the year ended December 31, 2017, compared to $215.4 million ZEV credit sales and $86.9 million in non-ZEV regulatory credit sales in the year ended December 31, 2016. The increases were partially offset by additional deferrals of Autopilot 2.0 revenue in the year ended December 31, 2017.

Automotive leasing revenue increased $344.8 million, or 45%, in the year ended December 31, 2017 compared to the year ended December 31, 2016. The increase was primarily due to an approximately 30% increase in the number of vehicles under leasing programs or programs with a resale value guarantee compared to the year ended December 31, 2016. In addition, during the year ended December 31, 2017, we recognized an increase of $23.4 million of automotive leasing revenue upon early payoff and expiration of resale value guarantees as compared to the year ended December 31, 2016.

Service and other revenue increased $533.2 million, or 114%, in the year ended December 31, 2017 compared to the year ended December 31, 2016. This was primarily due to an increase in used vehicle sales as a result of increased automotive sales as well as from the expansion of our trade-in program. Additionally, there was a $41.1 million increase from the inclusion of engineering service revenue from Grohmann Engineering GmbH (now Tesla Grohmann Automation GmbH, which we acquired on January 3, 2017, and a $68.4 million increase in non-warranty maintenance services revenue as our fleet continued to grow during the year ended December 31, 2017.

Energy Generation and Storage Segment

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

2018 Compared to 2017

Energy generation and storage revenue increased by $439.0 million, or 39%, in the year ended December 31, 2018 as compared to the year ended December 31, 2017. The increase was primarily due to increases in deployments of Powerpack, Powerwall, and cash and loan solar energy systems projects. The increase in Powerpack revenue was significant year-over-year due to increases in revenue recognized for commercial projects, most predominantly $81.2 million for the South Australia battery project. Additionally, we increased Powerwall production in the year ended December 31, 2018, which helped us to continue to work through our energy storage order backlog.

2017 Compared to 2016

Energy generation and storage revenue increased by $934.9 million, or 515%, in the year ended December 31, 2017 compared to the year ended December 31, 2016, predominantly due to the inclusion of the full-year of revenue from our solar business, which we gained by acquiring SolarCity on November 21, 2016.

Cost of Revenues and Gross Margin

| | Year Ended December 31, | | | 2018 vs. 2017 Change | | 2017 vs. 2016 Change | |
|---|---|---|---|---|---|---|---|
| (Dollars in thousands) | 2018 | 2017 | 2016 | $ | % | $ | % |
| Cost of revenues | | | | | | | |
| Automotive sales | $13,685,572 | $6,724,480 | $4,268,087 | $6,961,092 | 104% | $2,456,393 | 58 % |
| Automotive leasing | 488,425 | 708,224 | 481,994 | (219,799 ) | -31 % | 226,230 | 47 % |
| Total automotive cost of revenues | 14,173,997 | 7,432,704 | 4,750,081 | 6,741,293 | 91 % | 2,682,623 | 56 % |
| Services and other | 1,880,354 | 1,229,022 | 472,462 | 651,332 | 53 % | 756,560 | 160% |
| Total automotive & services and other segment cost of revenues | 16,054,351 | 8,661,726 | 5,222,543 | 7,392,625 | 85 % | 3,439,183 | 66 % |
| Energy generation and storage segment | 1,364,896 | 874,538 | 178,332 | 490,358 | 56 % | 696,206 | 390% |
| Total cost of revenues | $17,419,247 | $9,536,264 | $5,400,875 | $7,882,983 | 83 % | $4,135,389 | 77 % |
| | | | | | | | |
| Gross profit total automotive | $4,340,986 | $2,208,596 | $1,600,685 | | | | |
| Gross margin total automotive | 23 % | 23 % | 25 % | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Gross profit total automotive & services and other segment | $3,851,673 | | $1,980,759 | | $1,596,195 | |
| Gross margin total automotive & services and other segment | 19 | % | 19 | % | 23 | % |
| | | | | | | |
| Gross profit energy generation and storage segment | $190,348 | | $241,728 | | $3,062 | |
| Gross margin energy generation and storage segment | 12 | % | 22 | % | 2 | % |
| | | | | | | |
| Total gross profit | $4,042,021 | | $2,222,487 | | $1,599,257 | |
| Total gross margin | 19 | % | 19 | % | 23 | % |

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Automotive & Services and Other Segment

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

Cost of automotive leasing revenue includes primarily the amortization of operating lease vehicles over the lease term, as well as warranty expenses recognized as incurred. Cost of automotive leasing revenue also includes vehicle connectivity costs and allocations of electricity and infrastructure costs related to our Supercharger network for vehicles under our leasing programs.

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

2018 Compared to 2017

Cost of automotive sales revenue increased $6.96 billion, or 104%, in the year ended December 31, 2018 as compared to the year ended December 31, 2017. The increase was primarily due to a significantly higher volume of Model 3 vehicles deliveries in 2018 and the recognition of $969.8 million of additional cost of automotive sales revenue due to the adoption of the new revenue standard. These increases were partially offset by significant reductions in Model 3 average costs per unit compared to the year ended December 31, 2017 primarily due to temporary under-utilization of manufacturing capacity at lower production volumes in 2017 and other cost efficiencies. Additionally, there were lower overall costs for Model S and Model X cash deliveries from approximately 3,240 fewer units delivered year-over-year and reductions in combined Model S and Model X average costs per unit as a result of increased manufacturing efficiencies.

Cost of automotive leasing revenue decreased $219.8 million, or 31%, in the year ended December 31, 2018 compared to the year ended December 31, 2017. The decrease was primarily due to a downward adjustment of $624.4 million from the adoption of the new revenue standard, partially offset by increased cost of automotive leasing revenue from an increase in cumulative vehicles under our direct vehicle leasing program and an increase in the number of vehicles under leasing programs where our counterparty has retained ownership of the vehicle during or at the end of the guarantee period when compared to the year ended December 31, 2017. When our counterparty retains ownership, the net book value of the leased vehicle of the lease vehicle is expensed to cost of automotive leasing revenue.

Cost of services and other revenue increased $651.3 million, or 53%, in the year ended December 31, 2018 as compared to the year ended December 31, 2017. The increase was primarily due to the increase in the cost of our new service centers, additional service personnel in existing and new service centers, Mobile Service capabilities, parts distribution centers and investment in new body shops to provide maintenance services to our rapidly growing fleet of vehicles. Additionally, there was an overall increase in the cost of used vehicle sales from the increased volume of relatively lower priced non-Tesla trade-in vehicles. These increases were partially offset by a decrease in cost of powertrain sales to another automobile manufacturer as we wound down the program in 2017.

Gross margin for total automotive remained relatively consistent at 23% in the years ended December 31, 2018 and 2017. There were increases from improved Model S and Model X combined margins as costs per unit decreased year-over-year from continuing manufacturing efficiencies and an increase in regulatory credits sales, which have no associated costs. The increases were partially offset by margin dilution from Model 3 despite Model 3 margins improving year-over-year. The higher proportion of Model 3 as a percentage of our total automotive sales in the year ended December 31, 2018 lowered our overall gross margin for total automotive as Model 3 had a lower annualized margin than Model S and Model X due to temporary under-utilization of manufacturing capacity at lower production volumes in the first half of 2018 and as we have yet to achieve significant manufacturing efficiencies in the production of Model 3.

Gross margin for total automotive & services and other segment remained relatively consistent at 19% in the years ended December 31, 2018 and 2017 primarily due to the automotive gross margin impacts discussed above. Services and other has historically operated at lower margins than our automotive sales and leasing business but has a small impact on the overall segment margin because of its relatively small revenue base.

2017 Compared to 2016

Cost of automotive sales revenues increased $2.46 billion, or 58%, in the year ended December 31, 2017 compared to the year ended December 31, 2016. This was primarily due to a 58% increase in vehicle deliveries resulting from increased sales of Model S and Model X, as well as the commencement of deliveries of Model 3 in the third quarter of 2017.

Cost of automotive leasing revenue increased $226.2 million, or 47%, in the year ended December 31, 2017 compared to the year ended December 31, 2016. This was primarily due to an approximately 30% increase in the number of vehicles under leasing programs or programs with a resale value guarantee compared to the year ended December 31, 2016. In addition, during the year ended December 31, 2017, we recognized an increase of $23.4 million in cost of automotive leasing revenue upon early payoff and the expiration of resale value guarantees.

Cost of services and other revenue increased $756.6 million, or 160%, in the year ended December 31, 2017 compared to the year ended December 31, 2016, primarily due to the increase in cost of used vehicle sales due to increased volume and the increase in cost to provide maintenance services as our fleet continues to grow.

Gross margin for total automotive decreased from 25% to 23% in the year ended December 31, 2017 compared to the year ended December 31, 2016. The commencement of deliveries of Model 3 in the third quarter of 2017 whereby the full operating costs and depreciation were recorded at much lower production volumes as production ramps and increases in early payoffs and expirations of resale value guarantees year-over-year contributed to the lower gross margin. Lower material and manufacturing costs for Model S and Model X, as we further improved our vehicle production processes and the partial recognition of autopilot 2.0 revenue in the year ended December 31, 2017 partially offset the overall decrease.

Gross margin for total automotive & services and other segment decreased from 23% to 19% in the year ended December 31, 2017 compared to the year ended December 31, 2016. These decreases are driven by the factors impacting gross margin for total automotive, as explained above, as well as higher costs of maintenance service.

Energy Generation and Storage Segment

Cost of energy generation and storage revenue includes direct and indirect material and labor costs, warehouse rent, freight, warranty expense, other overhead costs and amortization of certain acquired intangible assets. In addition, where arrangements are accounted for as operating leases, the cost of revenue is primarily comprised of depreciation of the cost of leased solar energy systems, maintenance costs associated with those systems and amortization of any initial direct costs.

2018 Compared to 2017

Cost of energy generation and storage revenue increased by $490.4 million, or 56%, in the year ended December 31, 2018 as compared to the year ended December 31, 2017 primarily due to increases in deployments of Powerpack, Powerwall, and cash and loan solar energy system projects. The increase in Powerpack cost of revenue was significant year-over-year due to increases in cost of revenue recognized for commercial projects, most predominantly $72.5 million for the South Australia battery project. Additionally, costs for cash and loan solar energy system projects have increased from higher installation costs, higher allocation of overhead costs from lower deployment of solar projects overall, and certain warranty related one-time charges. There were also higher costs for our solar energy system leasing arrangements due to impairment charges and higher costs from temporary manufacturing under-utilization of our Solar Roof ramp.

Gross margin for energy generation and storage decreased from 22% to 12% in the year ended December 31, 2018 compared to the year ended December 31, 2017. The decrease was primarily due to the higher proportion of energy storage of our overall energy generation and storage portfolio, due to a three-fold growth of MWh of energy storage deployments in the year ended December 31, 2018. Although energy storage margins have improved significantly as compared to the year ended December 31, 2017, it continues to operate at a lower margin than our solar business, thereby having a greater dilutive impact on our gross margin in the year ended December 31, 2018. Additionally, increases in costs for our cash and loan solar energy system projects, impairment charges on solar energy system leasing arrangements, and temporary manufacturing under-utilization of our Solar Roof ramp have further contributed to the decrease in gross margin.

2017 Compared to 2016

Cost of energy generation and storage revenue increased by $696.2 million, or 390%, in the year ended December 31, 2017 compared to the year ended December 31, 2016. This was primarily due to the inclusion of the full-year of costs from our solar business, which we gained by acquiring SolarCity on November 21, 2016.

Gross margin for energy generation and storage increased from 2% to 22% in the year ended December 31, 2017 compared to the year ended December 31, 2016. This was predominantly due to the inclusion of the full-year of revenue and costs from our solar business, which we gained by acquiring SolarCity.

Research and Development Expense

| | Year Ended December 31, | | | 2018 vs. 2017 Change | | 2017 vs. 2016 Change | |
|---|---|---|---|---|---|---|---|
| (Dollars in thousands) | 2018 | 2017 | 2016 | $ | % | $ | % |
| Research and development | $1,460,370 | $1,378,073 | $834,408 | $82,297 | 6% | $543,665 | 65% |
| As a percentage of revenues | 7% | 12% | 12% | | | | |

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

R&D expenses increased $82.3 million, or 6%, in the year ended December 31, 2018 compared to the year ended December 31, 2017. This increase was primarily due to an $84.2 million increase in employee and labor related expenses from headcount growth to support our business expansion and $45.2 million increase in stock-based compensation expense related to an increase in headcount and number of employee stock awards granted for new hire and refresher employee stock grants. Additionally, there was an increase of $16.0 million in facilities, freight, and depreciation expenses due to business expansion, offset by a $69.7 million decrease in expensed materials as there were higher costs in the year ended December 31, 2017 primarily related to Model 3 development.

R&D expenses increased $543.7 million, or 65%, in the year ended December 31, 2017 compared to the year ended December 31, 2016. This increase was primarily due to a $274.9 million increase in employee and labor related expenses from increased headcount as a result of our acquisitions as well as headcount growth from the expansion of our automotive and energy generation and storage businesses, and a $44.3 million increase in stock-based compensation expense related to an increase in headcount and number of employee stock awards granted for new hire and refresher employee stock grants. Additionally, there were increases in facilities expenses, depreciation expenses, professional and outside service expenses and expensed materials to support the development of future products.

Selling, General and Administrative Expense

| | Year Ended December 31, | | | 2018 vs. 2017 Change | | 2017 vs. 2016 Change | |
|---|---|---|---|---|---|---|---|
| (Dollars in thousands) | 2018 | 2017 | 2016 | $ | % | $ | % |
| Selling, general and administrative | $2,834,491 | $2,476,500 | $1,432,189 | $357,991 | 14% | $1,044,311 | 73% |
| As a percentage of revenues | 13% | 21% | 20% | | | | |

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

SG&A expenses increased $358.0 million, or 14%, in the year ended December 31, 2018 as compared to the year ended December 31, 2017. The increase was primarily due to a $193.1 million increase in stock-based compensation expense related to the 2018 CEO Performance Award and stock awards granted for new hires and refresher employee stock grants. Additionally, there was a $153.9 million increase in office, information technology and facilities-related expenses and sales and marketing activities to support our business expansion.

SG&A expenses increased $1.04 billion, or 73%, in the year ended December 31, 2017 compared to the year ended December 31, 2016. This increase was primarily due to a $524.0 million increase in employee and labor related expenses from increased headcount as a result of our acquisitions as well as headcount growth from the expansion of our automotive and energy generation and storage businesses, and a $64.9 million increase in stock-based compensation expense related to an increase in headcount and number of employee stock awards granted for new hire and refresher employee stock grants. Additionally, the increase was due to a $310.6 million increase in office, information technology and facilities-related expenses to support the growth of our business as well as sales and marketing activities to handle our expanding market presence and a $140.6 million increase in professional and outside service expenses to support the growth of our business.

Restructuring and other

| | Year Ended December 31, | 2018 vs. 2017 Change | 2017 vs. 2016 Change |
|---|---|---|---|

| (Dollars in thousands) | 2018 | | 2017 | | 2016 | | $ | % | $ | % |
|---|---|---|---|---|---|---|---|---|---|---|
| Restructuring and other | $135,233 | | $ — | | $ — | | $135,233 | N/A | $— | N/A |
| As a percentage of revenues | 1 | % | 0 | % | 0 | % | | | | |

During 2018, we carried out certain restructuring actions in order to reduce costs and improve efficiency and recognized $36.6 million of employee termination expenses and estimated losses from sub-leasing a certain facility. The employee termination cash expenses of $27.3 million were substantially paid by the end of 2018, while the remaining amounts were non-cash. Also included within restructuring and other activities was $55.2 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 in-process research and development asset is not commercially feasible. Consequently, we recognized an impairment loss of $13.3 million.

In October 2018, a final court order was entered approving the terms of a settlement in connection with the SEC's legal actions relating to Elon Musk's prior consideration during the third quarter of 2018 of a take-private proposal for Tesla. Consequently, we recognized settlement and legal expenses of $30.1 million in the year ended December 31, 2018. These expenses were substantially paid by the end of 2018.

There were no restructuring actions in the years ended December 31, 2017 and 2016.

Interest Expense

| (Dollars in thousands) | Year Ended December 31, 2018 | 2017 | 2016 | 2018 vs. 2017 Change $ | % | 2017 vs. 2016 Change $ | % |
|---|---|---|---|---|---|---|---|
| Interest expense | $(663,071) | $(471,259) | $(198,810) | $(191,812) | 41% | $(272,449) | 137% |
| As a percentage of revenues | 3% | 4% | 3% | | | | |

Interest expense increased by $191.8 million, or 41%, in the year ended December 31, 2018 as compared to the year ended December 31, 2017. The increase was primarily due to an increase in our average outstanding indebtedness at relatively consistent weighted average interest rates as compared to the year ended December 31, 2017. Additionally, there was a decrease of $70.0 million in the amount of interest we capitalized from the consolidated statement of operations to property, plant, and equipment on the consolidated balance sheets. Lower capitalization results in higher interest expense. The amount of interest we capitalize is driven by our construction in progress balance, which decreased year-over-year due to significant Model 3 capital expenditure ramp in the year ended December 31, 2017.

Interest expense increased by $272.4 million, or 137%, in the year ended December 31, 2017 as compared to the year ended December 31, 2016. The increase was primarily due to the inclusion of the full-year of interest expense from SolarCity of $185.5 million for the year ended December 31, 2017. In addition, our average outstanding indebtedness has increased in the year ended December 31, 2017 as compared to the year ended December 31, 2016 mainly due to the Convertible Senior Notes due in 2022 and the Senior Notes due in 2025, both of which we issued during 2017.

Other Income (Expense), Net

| (Dollars in thousands) | Year Ended December 31, 2018 | 2017 | 2016 | 2018 vs. 2017 Change $ | % | 2017 vs. 2016 Change $ | % |
|---|---|---|---|---|---|---|---|
| Other income (expense), net | $21,866 | $(125,373) | $111,272 | $147,239 | Not meaningful | $(236,645) | Not meaningful |
| As a percentage of revenues | 0% | -1% | 2% | | | | |

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

Other income (expense), net, changed favorably by $147.2 million to a gain of $21.9 million in the year ended December 31, 2018 from a loss of $125.4 million in the year ended December 31, 2017. The change was primarily due to favorable fluctuations in foreign currency exchange rates and gains from interest rate swaps related to our debt facilities year-over-year. Additionally, we had $57.7 million of losses in the year ended December 31, 2017 for measurement period adjustments to the acquisition date fair values of certain SolarCity liabilities as previously reported in our Annual Report on Form 10-K for the year ended December 31, 2016, with no corresponding expense in the year ended December 31, 2018.

Other income (expense), net, changed unfavorably by $236.7 million to a loss of $125.4 million in the year ended December 31, 2017 from a gain of $111.3 million in the year ended December 31, 2016. The decrease was primarily due to $57.7 million of losses in the year ended December 31, 2017 for measurement period adjustments to the acquisition date fair value of SolarCity and fluctuations in foreign currency exchange rates.

Provision for Income Taxes

| (Dollars in thousands) | Year Ended December 31, 2018 | 2017 | 2016 | 2018 vs. 2017 Change $ | % | 2017 vs. 2016 Change $ | % |
|---|---|---|---|---|---|---|---|
| Provision for income taxes | $57,837 | $31,546 | $26,698 | $26,291 | 83% | $4,848 | 18% |
| Effective tax rate | -6 % | -1 % | -4 % | | | | |

Our provision for income taxes increased by $26.3 million, or 83%, in the year ended December 31, 2018 as compared to the year ended December 31, 2017. The increase was primarily due to the increase in taxable profits in certain foreign jurisdictions year-over-year.

Our provision for income taxes increased by $4.9 million, or 18%, in the year ended December 31, 2017 as compared to the year ended December 31, 2016. This increase was primarily due to the increase in vehicle deliveries in foreign tax jurisdictions, partially offset by $10.5 million of future U.S. alternative minimum tax refunds as a result of the Tax Act, which previously had an associated valuation allowance.

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

| (Dollars in thousands) | Year Ended December 31, 2018 | 2017 | 2016 | 2018 vs. 2017 Change $ | % | 2017 vs. 2016 Change $ | % |
|---|---|---|---|---|---|---|---|
| Net loss attributable to noncontrolling interests and redeemable noncontrolling interests in subsidiaries | $(86,491) | $(279,178) | $(98,132) | $192,687 | -69% | $(181,046) | 184% |

Our net income (loss) attributable to noncontrolling interests and redeemable noncontrolling interests was related to financing fund arrangements.

Liquidity and Capital Resources

As of December 31, 2018, we had $3.69 billion of cash and cash equivalents. Balances held in foreign currencies had a U.S. dollar equivalent of $749.0 million and consisted primarily of Chinese yuan, euros and Japanese yen. Our sources of cash are predominately from our deliveries of vehicles, sales and installations of our energy storage products and solar energy systems, proceeds from debt facilities, proceeds from financing funds and proceeds from equity offerings.

Our sources of liquidity and cash flows enable us to fund ongoing operations, research and development projects for new products, increases in Model 3 production capacity at the Tesla Factory, the establishment of Model 3 production capacity at Gigafactory Shanghai, the continued expansion of Gigafactory 1, the addition of manufacturing capacity for Model Y with the expectation to achieve volume production by the end of 2020, and the continued expansion of our retail and service locations, body shops, Mobile Service fleet and Supercharger network. We currently expect total 2019 capital expenditures to be approximately $2.5 billion.

In 2019, we will continue to utilize our increasing experience and learnings from past and current product ramps to do so at a level of capital efficiency per dollar of spend that we expect to be significantly greater than historical levels. For example, based on our experience with ramping Model 3 at the Tesla Factory, we expect that the capital spend per unit of Model 3 manufacturing capacity at Gigafactory Shanghai will be less than that of our line in Fremont. Likewise, based on such experience and the substantial commonality of components we expect between Model Y and Model 3, we believe that the production ramp of Model Y will be significantly faster than that of Model 3 and cost less per unit of manufacturing capacity than that of Model 3 at Fremont. Considering the pipeline of new products planned at this point, and consistent with our current strategy of using a partner to manufacture cells, as well as considering all other infrastructure growth and expansion of Gigafactory 1, Gigafactory 2 and Gigafactory Shanghai, we currently estimate that capital expenditures will be between $2.5 to $3.0 billion annually for the next two fiscal years. Moreover, we expect that the cash we generate from our core operations will generally be sufficient to cover our future capital expenditures and to pay down our near-term debt obligations (including the repayment of $920.0 million for our 0.25% Convertible Senior Notes due on March 1, 2019), although we may choose to seek alternative financing sources. For example, we expect that much of our investment in Gigafactory Shanghai will be funded through indebtedness arranged through local financial institutions in China. As always, we continually evaluate our capital expenditure needs and may decide it is best to raise additional capital to fund the rapid growth of our business.

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

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

In addition, we had $1.50 billion of unused committed amounts under our credit facilities and financing funds as of December 31, 2018, some of which are subject to satisfying specified conditions prior to draw-down (such as pledging to our lenders sufficient amounts of qualified receivables, inventories, leased vehicles and our interests in those leases, solar energy systems and the associated customer contracts, our interests in financing funds or various other assets; and contributing or selling qualified solar energy systems and the associated customer contracts or qualified leased vehicles and our interests in those leases into the financing funds). Upon the draw-down of any unused committed amounts, there are no restrictions on the use of such funds for general corporate purposes. For details regarding our indebtedness and financing funds, refer to Note 13, Long-Term Debt Obligations, and Note 18, Variable Interest Entity Arrangements, to the consolidated financial statements included elsewhere in this Annual Report on Form 10-K.

Summary of Cash Flows

| (Dollars in thousands) | Year Ended December 31, 2018 | 2017 | 2016 |
|---|---|---|---|
| Net cash provided by (used in) operating activities | $2,097,802 | $(60,654 ) | $(123,829 ) |
| Net cash used in investing activities | $(2,337,428) | $(4,195,877) | $(1,081,085) |
| Net cash provided by financing activities | $573,755 | $4,414,864 | $3,743,976 |

Cash Flows from Operating Activities

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

Net cash from operating activities changed favorably by $2.16 billion to net cash provided by operating activities of $2.10 billion during the year ended December 31, 2018 from net cash used in operating activities of $60.7 million during the year ended December 31, 2017. This favorable change was primarily due to the increase in net income, excluding non-cash expenses and gains, of $1.60 billion and the decrease in net operating assets and liabilities of $554.6 million. The decrease in net operating assets and liabilities was mainly driven by an increase in accounts payable and accrued liabilities, as a result of increased expenditures to support our ramp of Model 3 deliveries and a net decrease in operating lease vehicles and resale value guarantee liability primarily due to the adoption of the new revenue standard, wherein certain vehicle sales to customer or leasing partners with a resale value guarantee were previously accounted for as an in-substance operating leases are now accounted for as sales with a right of return upon control transfer. The increase in cash from certain operating activities was partially offset by the increase in accounts receivable and inventory, as a result of increased Model 3 and energy products deliveries and production. Additionally, there was a decrease in customer deposits primarily due to Model 3 fulfillments and an increase in other assets as we paid $141.3 million for the land use rights for Gigafactory Shanghai.

Net cash used in operating activities during the year ended December 31, 2017 decreased by $63.2 million as compared to the year ended December 31, 2016 due to the decrease in net operating assets and liabilities of $197.3 million partially offset by the decrease in net loss, excluding non-cash expenses and gains, of $134.1 million. The decrease in working capital was mainly driven by faster processing of payments for our vehicles and our focus on reducing inventory in the fourth quarter of 2017.

During the year ended December 31, 2016, cash used in operating activities was primarily a result of our net loss of $773.0 million, the increase in accounts payable and accrued liabilities of $750.6 million as our business expanded, the increase in resale value guarantees of $326.9 million and deferred revenue of $383.0 million as the number of vehicles with a resale value guarantee increased and the increase in customer deposits of $388.4 million primarily due to Model 3 reservations. These increases were partially offset by the increase in inventories and operating lease vehicles of $2.47 billion as we expanded our program for direct leases and vehicles with a resale value guarantee.

Cash Flows from Investing Activities

Cash flows from investing activities and their variability across each period related primarily to capital expenditures, which were $2.32 billion during 2018, $4.08 billion during 2017 and $1.44 billion during 2016. Capital expenditures during 2018 were $2.10 billion from purchases of property and equipment, mainly for Model 3 production and the expansion of our customer support infrastructure, and $218.8 million for the design, acquisition and installation of solar energy systems under operating leases with customers.

Capital expenditures during 2017 were $3.41 billion from purchases of property and equipment mainly for Model 3 production and $666.5 million for the design, acquisition and installation of solar energy systems under operating leases with customers. We also paid $114.5 million, net of the cash acquired, for acquisitions in 2017.

Capital expenditures during 2016 were $1.28 billion from purchases of property and equipment and $159.7 million for the design, acquisition and installation of solar energy systems under operating leases with customers. These expenditures were partially offset by the assumed cash of $342.7 million as a result of the SolarCity acquisition in 2016.

In 2014, we began construction of Gigafactory 1. We used $687.0 million, $1.45 billion, and $455.3 million of cash towards Gigafactory 1 construction during the years ended December 31, 2018, 2017, and 2016 respectively.

Cash Flows from Financing Activities

Cash flows from financing activities during the year ended December 31, 2018 consisted primarily of $1.18 billion of net borrowings under automobile asset-backed notes, $431.0 million of net borrowings under the senior secured asset-based revolving credit agreement (the “Credit Agreement”), $334.1 million from the issuance of solar asset-backed notes and $295.7 million of proceeds from exercises of stock options and other stock issuances. These cash inflows were partially offset by net repayments of $581.9 million under our vehicle lease-backed loan and security agreements (the “Warehouse Agreements”), collateralized lease repayments of $559.2 million, repayments of $230.0 million of the 2.75% Convertible Senior Notes due on November 1, 2018, and repayments of $210.2 million under the revolving aggregation credit facility. See Note 13, Long-Term Debt Obligations, and Note 2, Summary of Significant Accounting Policies, to the consolidated financial statements included elsewhere in this Annual Report on Form 10-K for further details regarding our debt obligations and collateralized borrowings, respectively.

Cash flows from financing activities during the year ended December 31, 2017 consisted primarily of $966.4 million from the issuance of the 2.375% Convertible Senior Notes due in 2022, $1.77 billion from the issuance of the 5.3% Senior Notes due in 2025 and $400.2 million from our March 2017 public offering of common stock, net of underwriter fees. However, we paid $151.2 million for the purchase of bond hedges net of the amount we received from the sale of warrants. Furthermore, we received $511.3 million of net proceeds from collateralized lease borrowings and $527.5 million of net proceeds from fund investors.

Cash flows from financing activities during the year ended December 31, 2016 consisted primarily of $1.70 billion from our May 2016 public offering of common stock, net of underwriter fees, $995.4 million of proceeds from issuances of debt net of repayments and $769.7 million of net proceeds from collateralized lease borrowings. The net proceeds from issuances of debt consisted primarily of $834.0 million of net borrowings under the Credit Agreement and $390.0 million of borrowings under the Warehouse Agreements, partially offset by settlements of $454.7 million for certain conversions of the 1.50% Convertible Senior Notes due in June 2018. Furthermore, we received $180.3 million of net proceeds from fund investors.

Contractual Obligations

We are party to contractual obligations involving commitments to make payments to third parties, including certain debt financing arrangements and leases, primarily for stores, service centers, certain manufacturing and corporate offices. These also include, as part of our normal business practices, contracts with suppliers for purchases of certain raw materials, components and services to facilitate adequate supply of these materials and services and capacity reservation contracts. The following table sets forth, as of December 31, 2018, certain significant obligations that will affect our future liquidity (in thousands):

| | | Year Ended December 31, | | | | | |
|---|---|---|---|---|---|---|---|
| | Total | 2019 | 2020 | 2021 | 2022 | 2023 | Thereafter |
| Operating lease obligations | $1,628,154 | $275,654 | $256,931 | $230,406 | $182,911 | $157,662 | $524,590 |
| Capital lease obligations, including interest | 1,461,236 | 416,952 | 503,545 | 506,197 | 23,828 | 4,776 | 5,938 |
| Purchase obligations (1) | 18,088,100 | 4,860,431 | 3,255,968 | 3,391,637 | 3,985,336 | 2,570,730 | 23,998 |
| Long-term debt, including scheduled interest (2) | 12,570,082 | 2,583,160 | 2,485,372 | 2,260,528 | 1,629,556 | 302,345 | 3,309,121 |
| Total | $33,747,572 | $8,136,197 | $6,501,816 | $6,388,768 | $5,821,631 | $3,035,513 | $3,863,647 |

(1) These amounts represent (i) purchase orders of $2.40 billion issued under binding and enforceable agreements with all vendors as of December 31, 2018 and (ii) $15.69 billion in other estimable purchase obligations pursuant to such agreements, primarily relating to the purchase of lithium-ion cells produced by Panasonic at Gigafactory 1, including any additional amounts we may have to pay vendors if we do not meet certain minimum purchase obligations. In cases where no purchase orders were outstanding under binding and enforceable agreements as of December 31, 2018, we have included estimated amounts based on our best estimates and assumptions or discussions with the relevant vendors as of such date or, where applicable, on amounts or assumptions included in such agreements for purposes of discussion or reference. In certain cases, such estimated amounts were subject to contingent events. Furthermore, these amounts do not include future payments for purchase obligations that were recorded in accounts payable or accrued liabilities as of December 31, 2018.

(2) Long-term debt, including scheduled interest, includes our non-recourse indebtedness of $3.61 billion. Non-recourse debt refers to debt that is recourse to only specified assets of our subsidiaries. Short-term scheduled interest payments and amortization of convertible senior note conversion features, debt discounts and deferred financing costs for the year ended December 31, 2019 is $361.2 million. Long-term scheduled interest payments and amortization of convertible senior note conversion features, debt discounts and deferred financing costs for the years thereafter is $1.58 billion.

The table above excludes unrecognized tax benefits of $243.8 million because if recognized, they would be an adjustment to our deferred tax assets.

Off-Balance Sheet Arrangements

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

Recent Accounting Pronouncements

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

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK
Foreign Currency Risk

We transact business globally in multiple currencies and hence have foreign currency risks related to our revenue, costs of revenue and operating expenses denominated in currencies other than the U.S. dollar (primarily the euro, Japanese yen, Canadian dollar, Chinese yuan and Norwegian krone). In general, we are a net receiver of currencies other than the U.S. dollar for our foreign subsidiaries. Accordingly, changes in exchange rates and, in particular, a strengthening of the U.S. dollar have in the past, and may in the future, negatively affect our revenue and other operating results as expressed in U.S. dollars.

We have also experienced, and will continue to experience, fluctuations in our net income (loss) as a result of gains (losses) on the settlement and the re-measurement of monetary assets and liabilities denominated in currencies that are not the local currency (primarily consisting of our intercompany and cash and cash equivalents balances). For the year ended December 31, 2018, we recognized a net foreign currency gain of $1.5 million in other income (expense), net, with our largest re-measurement exposures from the euro, New Taiwan dollar and Canadian dollar. For the year ended December 31, 2017, we recognized a net foreign currency loss of $52.3 million in other income (expense), net, with our largest re-measurement exposures from the euro, Canadian dollar and Norwegian krone.

We considered the historical trends in foreign currency exchange rates and determined that it is reasonably possible that adverse changes in foreign currency exchange rates of 10% for all currencies could be experienced in the near-term. These changes were applied to our total monetary assets and liabilities denominated in currencies other than our local currencies at the balance sheet dates to compute the impact these changes would have had on our net income (loss) before income taxes. These changes would have resulted in an adverse impact of $175.7 million at December 31, 2018 and $116.0 million at December 31, 2017.

Interest Rate Risk

We are exposed to interest rate risk on our borrowings that bear interest at floating rates. Pursuant to our risk management policies, in certain cases, we utilize derivative instruments to manage some of this risk. We do not enter into derivative instruments for trading or speculative purposes. A hypothetical 10% change in our interest rates would have increased our interest expense for the years ended December 31, 2018 and 2017 by $8.5 million and $7.6 million, respectively.

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, 2018 and 2017, 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, 2018, 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, 2018, 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, 2018 and 2017, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2018 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, 2018, based on criteria established in Internal Control - Integrated Framework (2013) issued by the COSO.

Change in Accounting Principle

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

/s/PricewaterhouseCoopers LLP

San Jose, California

February 19, 2019

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

Tesla, Inc.

Consolidated Balance Sheets

(in thousands, except per share data)

| | December 31, 2018 | December 31, 2017 |
|---|---|---|
| Assets | | |
| Current assets | | |
| Cash and cash equivalents | $ 3,685,618 | $ 3,367,914 |
| Restricted cash | 192,551 | 155,323 |
| Accounts receivable, net | 949,022 | 515,381 |
| Inventory | 3,113,446 | 2,263,537 |
| Prepaid expenses and other current assets | 365,671 | 268,365 |
| Total current assets | 8,306,308 | 6,570,520 |
| Operating lease vehicles, net | 2,089,758 | 4,116,604 |
| Solar energy systems, leased and to be leased, net | 6,271,396 | 6,347,490 |
| Property, plant and equipment, net | 11,330,077 | 10,027,522 |
| Intangible assets, net | 282,492 | 361,502 |
| Goodwill | 68,159 | 60,237 |
| MyPower customer notes receivable, net of current portion | 421,548 | 456,652 |
| Restricted cash, net of current portion | 398,219 | 441,722 |
| Other assets | 571,657 | 273,123 |
| Total assets | $ 29,739,614 | $ 28,655,372 |
| Liabilities | | |
| Current liabilities | | |
| Accounts payable | $ 3,404,451 | $ 2,390,250 |
| Accrued liabilities and other | 2,094,253 | 1,731,366 |
| Deferred revenue | 630,292 | 1,015,253 |
| Resale value guarantees | 502,840 | 787,333 |
| Customer deposits | 792,601 | 853,919 |
| Current portion of long-term debt and capital leases | 2,567,699 | 796,549 |
| Current portion of promissory notes issued to related parties | — | 100,000 |
| Total current liabilities | 9,992,136 | 7,674,670 |
| Long-term debt and capital leases, net of current portion | 9,403,672 | 9,418,319 |
| Deferred revenue, net of current portion | 990,873 | 1,177,799 |
| Resale value guarantees, net of current portion | 328,926 | 2,309,222 |
| Other long-term liabilities | 2,710,403 | 2,442,970 |
| Total liabilities | 23,426,010 | 23,022,980 |
| Commitments and contingencies (Note 17) | | |
| Redeemable noncontrolling interests in subsidiaries | 555,964 | 397,734 |
| Convertible senior notes (Note 13) | — | 70 |
| Equity | | |
| Stockholders' equity | | |
| Preferred stock; $0.001 par value; 100,000 shares authorized; | — | — |

| | | |
|---|---|---|
| no shares issued and outstanding | | |
| Common stock; $0.001 par value; 2,000,000 shares authorized; 172,603 and 168,797 shares issued and outstanding as of December 31, 2018 and 2017, respectively | 173 | 169 |
| Additional paid-in capital | 10,249,120 | 9,178,024 |
| Accumulated other comprehensive (loss) income | (8,218 ) | 33,348 |
| Accumulated deficit | (5,317,832 ) | (4,974,299 ) |
| Total stockholders' equity | 4,923,243 | 4,237,242 |
| Noncontrolling interests in subsidiaries | 834,397 | 997,346 |
| Total liabilities and equity | $ 29,739,614 | $ 28,655,372 |

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

Tesla, Inc.

Consolidated Statements of Operations

(in thousands, except per share data)

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| Revenues | | | |
| Automotive sales | $17,631,522 | $8,534,752 | $5,589,007 |
| Automotive leasing | 883,461 | 1,106,548 | 761,759 |
| Total automotive revenues | 18,514,983 | 9,641,300 | 6,350,766 |
| Energy generation and storage | 1,555,244 | 1,116,266 | 181,394 |
| Services and other | 1,391,041 | 1,001,185 | 467,972 |
| Total revenues | 21,461,268 | 11,758,751 | 7,000,132 |
| Cost of revenues | | | |
| Automotive sales | 13,685,572 | 6,724,480 | 4,268,087 |
| Automotive leasing | 488,425 | 708,224 | 481,994 |
| Total automotive cost of revenues | 14,173,997 | 7,432,704 | 4,750,081 |
| Energy generation and storage | 1,364,896 | 874,538 | 178,332 |
| Services and other | 1,880,354 | 1,229,022 | 472,462 |
| Total cost of revenues | 17,419,247 | 9,536,264 | 5,400,875 |
| Gross profit | 4,042,021 | 2,222,487 | 1,599,257 |
| Operating expenses | | | |
| Research and development | 1,460,370 | 1,378,073 | 834,408 |
| Selling, general and administrative | 2,834,491 | 2,476,500 | 1,432,189 |
| Restructuring and other | 135,233 | — | — |
| Total operating expenses | 4,430,094 | 3,854,573 | 2,266,597 |
| Loss from operations | (388,073) | (1,632,086) | (667,340) |
| Interest income | 24,533 | 19,686 | 8,530 |
| Interest expense | (663,071) | (471,259) | (198,810) |
| Other income (expense), net | 21,866 | (125,373) | 111,272 |
| Loss before income taxes | (1,004,745) | (2,209,032) | (746,348) |
| Provision for income taxes | 57,837 | 31,546 | 26,698 |
| Net loss | (1,062,582) | (2,240,578) | (773,046) |
| Net loss attributable to noncontrolling interests and redeemable noncontrolling interests in subsidiaries | (86,491) | (279,178) | (98,132) |
| Net loss attributable to common stockholders | $(976,091) | $(1,961,400) | $(674,914) |
| Net loss per share of common stock attributable to common stockholders | | | |
| Basic | $(5.72) | $(11.83) | $(4.68) |
| Diluted | $(5.72) | $(11.83) | $(4.68) |
| Weighted average shares used in computing net loss | | | |

| | | | |
|---|---|---|---|
| per share of common stock | | | |
| Basic | 170,525 | 165,758 | 144,212 |
| Diluted | 170,525 | 165,758 | 144,212 |

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

Tesla, Inc.

Consolidated Statements of Comprehensive Loss

(in thousands)

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| Net loss attributable to common stockholders | $(976,091) | $(1,961,400) | $(674,914) |
| Unrealized gains (losses) on derivatives: | | | |
| Change in net unrealized gain | — | — | 43,220 |
| Less: Reclassification adjustment for net gains into net loss | — | (5,570) | (44,904) |
| Net unrealized loss on derivatives | — | (5,570) | (1,684) |
| Foreign currency translation adjustment | (41,566) | 62,658 | (18,500) |
| Other comprehensive (loss) income | (41,566) | 57,088 | (20,184) |
| Comprehensive loss | $(1,017,657) | $(1,904,312) | $(695,098) |

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

Tesla, Inc.

Consolidated Statements of Redeemable Noncontrolling Interests and Equity

(in thousands, 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, 2015 | $— | 131,425 | $131 | $3,409,452 | $(2,322,323) | $(3,556) | $1,083,704 | $— | $1,083,704 |
| Reclassification from mezzanine equity to equity for 1.50% Convertible Senior Notes due in 2018 | — | — | — | 38,501 | — | — | 38,501 | — | 38,501 |
| Exercises of conversion feature of convertible senior notes | — | — | — | (15,056) | — | — | (15,056) | — | (15,056) |
| Common stock issued, net of shares withheld for employee taxes | — | 11,096 | 11 | 163,817 | — | — | 163,828 | — | 163,828 |
| Issuance of common stock in May 2016 public offering at $215.00 per share, net of issuance costs of $14,595 | — | 7,915 | 8 | 1,687,139 | — | — | 1,687,147 | — | 1,687,147 |
| Issuance of common stock upon acquisition of SolarCity and assumed | — | 11,125 | 11 | 2,145,977 | — | — | 2,145,988 | — | 2,145,988 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| awards | | | | | | | | | |
| Stock-based compensation | — | — | — | 347,357 | — | — | 347,357 | — | 347,357 |
| Assumption of capped calls | — | — | — | (3,460) | — | — | (3,460) | — | (3,460) |
| Assumption of noncontrolling interests through acquisition | 315,943 | — | — | — | — | — | — | 750,574 | 750,574 |
| Contributions from noncontrolling interests through acquisition | 100,996 | — | — | — | — | — | — | 100,531 | 100,531 |
| Distributions to noncontrolling interests through acquisition | (7,137) | — | — | — | — | — | — | (10,561) | (10,561) |
| Net loss | (42,763) | — | — | — | (674,914) | — | (674,914) | (55,369) | (730,283) |
| Other comprehensive loss | — | — | — | — | — | (20,184) | (20,184) | — | (20,184) |
| Balance as of December 31, 2016 | 367,039 | 161,561 | 161 | 7,773,727 | (2,997,237) | (23,740) | 4,752,911 | 785,175 | 5,538,086 |
| Adjustment of prior periods due to adoption of Accounting Standards Update No. 2016-09 | — | — | — | 15,662 | (15,662) | — | — | — | — |
| Conversion feature of Convertible Senior Notes due in 2022 | — | — | — | 145,613 | — | — | 145,613 | — | 145,613 |
| Purchases of bond hedges | — | — | — | (204,102) | — | — | (204,102) | — | (204,102) |
| Sales of warrants | — | — | — | 52,883 | — | — | 52,883 | — | 52,883 |
| Reclassification from mezzanine equity to equity for 1.50% Convertible Senior Notes | — | — | — | 8,714 | — | — | 8,714 | — | 8,714 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| due in 2018 | | | | | | | | | |
| Exercises of conversion feature of convertible senior notes | — | 1,408 | 2 | 230,151 | — | — | 230,153 | — | 230,153 |
| Common stock issued, net of shares withheld for employee taxes | — | 4,257 | 4 | 259,381 | — | — | 259,385 | — | 259,385 |
| Issuance of common stock in March 2017 public offering at $262.00 per share, net of issuance costs of $2,854 | — | 1,536 | 2 | 399,645 | — | — | 399,647 | — | 399,647 |
| Issuance of common stock upon acquisitions and assumed awards | — | 35 | 0 | 10,528 | — | | 10,528 | — | 10,528 |
| Stock-based compensation | — | — | — | 485,822 | — | — | 485,822 | — | 485,822 |
| Contributions from noncontrolling interests | 192,421 | — | — | — | — | — | — | 597,282 | 597,282 |
| Distributions to noncontrolling interests | (100,703) | — | — | — | — | — | — | (163,626) | (163,626) |
| Buy-outs of noncontrolling interests | (2,921) | — | — | — | — | — | — | (409) | (409) |
| Net loss | (58,102) | — | — | — | (1,961,400) | — | (1,961,400) | (221,076) | (2,182,476) |
| Other comprehensive income | — | — | — | — | — | 57,088 | 57,088 | — | 57,088 |
| Balance as of December 31, 2017 | 397,734 | 168,797 | 169 | 9,178,024 | (4,974,299) | 33,348 | 4,237,242 | 997,346 | 5,234,588 |
| Adjustments for prior periods from adopting ASC 606 | 8,101 | — | — | — | 623,172 | — | 623,172 | (89,084) | 534,088 |
| | — | — | — | — | 9,386 | — | 9,386 | — | 9,386 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Adjustments for prior periods from adopting Accounting Standards Update No. 2017-05 | | | | | | | | | |
| Reclassification from mezzanine equity to equity for 1.50% Convertible Senior Notes due in 2018 | — | — | — | 70 | — | — | 70 | — | 70 |
| Exercises of conversion feature of convertible senior notes | — | 238 | 0 | (40 ) | — | — | (40 ) | — | (40 ) |
| Common stock issued, net of shares withheld for employee taxes | — | 3,568 | 4 | 295,719 | — | — | 295,723 | — | 295,723 |
| Stock-based compensation | — | — | — | 775,554 | — | — | 775,554 | — | 775,554 |
| Contributions from noncontrolling interests | 275,736 | — | — | — | — | — | — | 161,399 | 161,399 |
| Distributions to noncontrolling interests | (61,557 ) | — | — | — | — | — | — | (209,994) | (209,994 ) |
| Buy-outs of noncontrolling interests | (2,829 ) | — | — | (207 ) | — | — | (207 ) | — | (207 ) |
| Net loss | (61,221 ) | — | — | — | (976,091 ) | — | (976,091 ) | (25,270 ) | (1,001,361) |
| Other comprehensive loss | — | — | — | — | — | (41,566) | (41,566 ) | — | (41,566 ) |
| Balance as of December 31, 2018 | $555,964 | 172,603 | $173 | $10,249,120 | $(5,317,832) | $(8,218 ) | $4,923,243 | $834,397 | $5,757,640 |

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

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Tesla, Inc.

Consolidated Statements of Cash Flows

(in thousands)

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| Cash Flows from Operating Activities | | | |
| Net loss | $(1,062,582) | $(2,240,578) | $(773,046) |
| Adjustments to reconcile net loss to net cash provided by (used in) operating activities: | | | |
| Depreciation, amortization and impairment | 1,901,050 | 1,636,003 | 947,099 |
| Stock-based compensation | 749,024 | 466,760 | 334,225 |
| Amortization of debt discounts and issuance costs | 158,730 | 91,037 | 94,690 |
| Inventory write-downs | 85,272 | 131,665 | 65,520 |
| Loss on disposals of fixed assets | 161,361 | 105,770 | 34,633 |
| Foreign currency transaction (gains) losses | (1,511) | 52,309 | (29,183) |
| Loss (gain) related to SolarCity acquisition | — | 57,746 | (88,727) |
| Non-cash interest and other operating activities | 48,507 | 135,237 | (15,179) |
| Changes in operating assets and liabilities, net of effect of business combinations: | | | |
| Accounts receivable | (496,732) | (24,635) | (216,565) |
| Inventory | (1,023,264) | (178,850) | (632,867) |
| Operating lease vehicles | (214,747) | (1,522,573) | (1,832,836) |
| Prepaid expenses and other current assets | (82,125) | (72,084) | 56,806 |
| Other assets and MyPower customer notes receivable | (207,409) | (15,453) | (49,353) |
| Accounts payable and accrued liabilities | 1,722,850 | 388,206 | 750,640 |
| Deferred revenue | 406,661 | 468,902 | 382,962 |
| Customer deposits | (96,685) | 170,027 | 388,361 |
| Resale value guarantee | (110,564) | 208,718 | 326,934 |
| Other long-term liabilities | 159,966 | 81,139 | 132,057 |
| Net cash provided by (used in) operating activities | 2,097,802 | (60,654) | (123,829) |
| Cash Flows from Investing Activities | | | |
| Purchases of property and equipment excluding capital leases, net of sales | (2,100,724) | (3,414,814) | (1,280,802) |
| Maturities of short-term marketable securities | — | — | 16,667 |
| Purchases of solar energy systems, leased and to be leased | (218,792) | (666,540) | (159,669) |
| Business combinations, net of cash acquired | (17,912) | (114,523) | 342,719 |
| Net cash used in investing activities | (2,337,428) | (4,195,877) | (1,081,085) |
| Cash Flows from Financing Activities | | | |
| Proceeds from issuances of common stock in public offerings | — | 400,175 | 1,701,734 |
| Proceeds from issuances of convertible and other debt | 6,176,173 | 7,138,055 | 2,852,964 |
| Repayments of convertible and other debt | (5,247,057) | (3,995,484) | (1,857,594) |
| Repayments of borrowings issued to related parties | (100,000) | (165,000) | — |
| Collateralized lease (repayments) borrowings | (559,167) | 511,321 | 769,709 |
| Proceeds from exercises of stock options and other stock issuances | 295,722 | 259,116 | 163,817 |
| Principal payments on capital leases | (180,805) | (103,304) | (46,889) |

| | | | |
|---|---|---|---|
| Common stock and debt issuance costs | (14,973) | (63,111) | (20,042) |
| Purchases of convertible note hedges | — | (204,102) | — |
| Proceeds from settlement of convertible note hedges | — | 287,213 | — |
| Proceeds from issuances of warrants | — | 52,883 | — |
| Payments for settlements of warrants | (11) | (230,385) | — |
| Proceeds from investments by noncontrolling interests in subsidiaries | 437,134 | 789,704 | 201,527 |
| Distributions paid to noncontrolling interests in subsidiaries | (227,304) | (261,844) | (21,250) |
| Payments for buy-outs of noncontrolling interests in subsidiaries | (5,957) | (373) | — |
| Net cash provided by financing activities | 573,755 | 4,414,864 | 3,743,976 |
| Effect of exchange rate changes on cash and cash equivalents and restricted cash | (22,700) | 39,726 | (6,553) |
| Net increase in cash and cash equivalents and restricted cash | 311,429 | 198,059 | 2,532,509 |
| Cash and cash equivalents and restricted cash, beginning of period | 3,964,959 | 3,766,900 | 1,234,391 |
| Cash and cash equivalents and restricted cash, end of period | $4,276,388 | $3,964,959 | $3,766,900 |
| Supplemental Non-Cash Investing and Financing Activities | | | |
| Shares issued in connection with business combinations and assumed vested awards | $— | $10,528 | $2,145,977 |
| Acquisitions of property and equipment included in liabilities | $249,141 | $914,108 | $663,771 |
| Estimated fair value of facilities under build-to-suit leases | $94,445 | $313,483 | $307,879 |
| Supplemental Disclosures | | | |
| Cash paid during the period for interest, net of amounts capitalized | $380,836 | $182,571 | $38,693 |
| Cash paid during the period for taxes, net of refunds | $35,409 | $65,695 | $16,385 |

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

Tesla, Inc.

Notes to Consolidated Financial Statements

Note 1 – Overview

Tesla, Inc. ("Tesla", the "Company", "we", "us" or "our") was incorporated in the State of Delaware on July 1, 2003. We desig 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 a number of VIEs (see Note 18, 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.

Reclassifications

Certain prior period balances have been reclassified to conform to the current period presentation in the consolidated financial statements and the accompanying notes as a result of the adoption of the Accounting Standards Update ("ASU") 2016-18, Statement of Cash Flows: Restricted Cash.

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, the accrued liability for solar energy system performance guarantees, determining lease pass-through financing obligations, the discount rates used to determine the fair value of investment tax credits, 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 Customers. 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 now recognize revenue when the vehicles are shipped 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 Revenue and Automotive Leasing Revenue sections below for further discussion of the impact on various categories of vehicle sales.

Following the adoption of the new revenue standard, the revenue recognition for our other sales arrangements, including sales of solar energy systems, energy storage products, services, and sales of used vehicles, remained consistent with our historical revenue recognition policy. Under our lease pass-through fund arrangements, we do not have any further performance obligations and therefore reclassified all investment tax credit (“ITC”) deferred revenue as of December 31, 2017, to accumulated deficit as part of our adoption entry. The corresponding effects of the changes to lease pass-through fund arrangements are also reflected in our non-controlling interests in subsidiaries. Additionally, we have considered the impact from any new revenue arrangements in the current year that would have been accounted for differently under ASC 605, Revenue Recognition, as an adjustment from adoption of the new revenue standard.

Accordingly, the cumulative effect of the changes made to our consolidated January 1, 2018 consolidated balance sheet for the adoption of the new revenue standard was as follows (in thousands):

| | Balances at December 31, 2017 | Adjustments from Adoption of New Revenue Standard | Balances at January 1, 2018 |
|---|---|---|---|
| Assets | | | |
| Inventory | $ 2,263,537 | $ (27,009) | $ 2,236,528 |
| Prepaid expenses and other current assets | 268,365 | 51,735 | 320,100 |
| Operating lease vehicles, net | 4,116,604 | (1,808,932) | 2,307,672 |
| Other assets | 273,123 | 68,355 | 341,478 |
| Liabilities | | | |
| Accrued liabilities and other | 1,731,366 | 74,487 | 1,805,853 |
| Deferred revenue | 1,015,253 | (436,737) | 578,516 |
| Resale value guarantees | 787,333 | (295,909) | 491,424 |
| Customer deposits | 853,919 | 56,081 | 910,000 |
| Deferred revenue, net of current portion | 1,177,799 | (429,771) | 748,028 |
| Resale value guarantees, net of current portion | 2,309,222 | (1,346,179) | 963,043 |
| Other long-term liabilities | 2,442,970 | 104,767 | 2,547,737 |
| Redeemable noncontrolling interests in subsidiaries | 397,734 | 8,101 | 405,835 |
| Equity | | | |
| Accumulated other comprehensive income | 33,348 | 15,221 | 48,569 |
| Accumulated deficit | (4,974,299) | 623,172 | (4,351,127) |
| Noncontrolling interests in subsidiaries | 997,346 | (89,084) | 908,262 |

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In accordance with the new revenue standard requirements, the impact of adoption on our consolidated balance sheet was as follows (in thousands):

| | December 31, 2018 | | |
|---|---|---|---|
| | As Reported | Balances Without Adoption of New Revenue Standard | Effect of Change Higher / (Lower) |
| Assets | | | |
| Inventory | 3,113,446 | 3,183,615 | (70,169) |
| Prepaid expenses and other current assets | 365,671 | 278,929 | 86,742 |
| Operating lease vehicles, net | 2,089,758 | 4,103,277 | (2,013,519) |
| Other assets | 571,657 | 463,558 | 108,099 |
| Liabilities | | | |
| Accrued liabilities and other | 2,094,253 | 2,005,180 | 89,073 |
| Deferred revenue | 630,292 | 1,122,427 | (492,135) |
| Resale value guarantees | 502,840 | 831,350 | (328,510) |
| Customer deposits | 792,601 | 734,241 | 58,360 |
| Deferred revenue, net of current portion | 990,873 | 1,432,566 | (441,693) |
| Resale value guarantees, net of current portion | 328,926 | 1,994,442 | (1,665,516) |
| Other long-term liabilities | 2,710,403 | 2,587,794 | 122,609 |
| Redeemable noncontrolling interests in subsidiaries | 555,964 | 549,520 | 6,444 |
| Equity | | | |
| Accumulated other comprehensive loss | (8,218) | 6,314 | (14,532) |
| Accumulated deficit | (5,317,832) | (6,163,834) | 846,002 |
| Noncontrolling interests in subsidiaries | 834,397 | 903,346 | (68,949) |

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In accordance with the new revenue standard requirements, the impact of adoption on our consolidated statement of operations and consolidated statement of comprehensive loss was as follows (in thousands):

| | Year Ended December 31, 2018 | | |
|---|---|---|---|
| | As Reported | Balances Without Adoption of New Revenue Standard | Effect of Change Higher / (Lower) |
| Revenues | | | |
| Automotive sales | $17,631,522 | $ 16,228,508 | $1,403,014 |
| Automotive leasing | 883,461 | 1,716,136 | (832,675 ) |
| Energy generation and storage | 1,555,244 | 1,540,419 | 14,825 |
| Cost of revenues | | | |
| Automotive sales | 13,685,572 | 12,715,818 | 969,754 |
| Automotive leasing | 488,425 | 1,112,828 | (624,403 ) |
| Provision for income taxes | 57,837 | 59,332 | (1,495 ) |
| Net loss | (1,062,582 ) | (1,303,890 ) | 241,308 |
| Net loss attributable to noncontrolling interests and redeemable noncontrolling interests in subsidiaries | (86,491 ) | (104,969 ) | 18,478 |
| Net loss attributable to common stockholders | (976,091 ) | (1,198,921 ) | 222,830 |
| Foreign currency translation adjustment | (41,566 ) | (11,813 ) | (29,753 ) |
| Comprehensive loss | (1,017,657 ) | (1,210,734 ) | 193,077 |

In accordance with the new revenue standard requirements, the impact of adoption on our consolidated statement of cash flows for the year ended December 31, 2018 was an increase in collateralized lease repayments of $474.2 million, from a net financing cash outflow of $84.9 million to a net financing cash outflow of $559.2 million as presented, with an offsetting increase to cash outflows from operations. Additionally, the adjustments to the consolidated balance sheet, consolidated statement of operations and consolidated statement of comprehensive income (loss) identified above would have corresponding impacts within the operating section of the consolidated statement of cash flows.

Automotive Segment

Automotive Sales Revenue

Automotive Sales without Resale Value Guarantee

Automotive sales revenue includes revenues related to deliveries of new vehicles, 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 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 full self-driving 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 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, full self-driving 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

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 now 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. 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, 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, full self-driving and over-the-air software updates on automotive sales with and without resale value guarantee consisted of the following (in thousands):

| | Year Ended December 31, 2018 |
|---|---|
| Deferred revenue on automotive sales with and without resale value guarantee— beginning of period (post adoption of new revenue standard) | $ 475,919 |
| Additions | 532,294 |
| Net changes in liability for pre-existing contracts | (13,248 ) |
| Revenue recognized | (112,214 ) |
| Deferred revenue on automotive sales with and without resale value guarantee— end of period | $ 882,751 |

Deferred revenue is equivalent to the total transaction price allocated to the performance obligations that are unsatisfied, or partially unsatisfied, as of December 31, 2018. From the deferred revenue balance as of January 1, 2018, revenue recognized during the year ended December 31, 2018 was $81.0 million. Of the total deferred revenue on automotive sales with and without resale value guarantees, we expect to recognize $326.7 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

California and certain other states have laws in place requiring vehicle manufacturers to ensure that a portion of the vehicles delivered for sale in that state during each model year are zero-emission vehicles. These laws and regulations provide that a manufacturer of zero-emission vehicles may earn regulatory credits (“ZEV credits”) and may sell excess credits to other manufacturers who apply such credits to comply with these regulatory requirements. Similar regulations exist at the federal level that require compliance related to greenhouse gas (“GHG”) emissions and also allow for the sale of excess credits by one manufacturer to other manufacturers. As a manufacturer solely of zero-emission vehicles, we have earned emission credits, such as ZEV and GHG credits, on our vehicles, and we expect to continue to earn these credits in the future. We enter into contractual agreements with third-parties to purchase our regulatory 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 regulatory credits at the time control of the regulatory credits is transferred to the purchasing party as automotive revenue in the consolidated statement of operations. Revenue from the sale of regulatory credits totaled $418.6 million, $360.3 million and $302.3 million for the years ended December 31, 2018, 2017 and 2016, respectively. We had no deferred revenue related to sales of automotive regulatory credits as of December 31, 2018 and 2017.

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 certain locations in the U.S., Canada and Europe. Currently, the direct vehicle leasing program is only offered for new leases to qualified customers in the U.S. and 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 have the option of either returning the vehicle to us or purchasing it 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, 2018, 2017 and 2016, we recognized $393.2 million, $220.6 million and $112.7 million, respectively. As of December 31, 2018 and 2017, we had deferred $109.8 million and $96.6 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 contract administration, 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.

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 continue to be accounted for as interest bearing collateralized borrowings in accordance with ASC 840, Leases. 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 deposit 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. We capitalize vehicles under this program to operating lease vehicles, net, on the consolidated balance sheet, 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 statement 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. 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 $479.8 million as of December 31, 2018, including $309.8 million within a 12-month period. As of December 31, 2018, we had $558.3 million of such borrowings recorded in resale value guarantees and $92.5 million recorded in deferred revenue liability. For the year ended December 31, 2018, we recognized $332.4 million of leasing revenue related to this program.

On a quarterly basis, we assess the estimated market values of vehicles under our buyback options program to determine if we have sustained a loss on any of these contracts. 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, although we have not experienced any material losses during any period to date.

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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 sheet to used vehicle inventory. As of December 31, 2018, $149.7 million of the guarantees were exercisable by customers within the next 12 months. For the year ended December 31, 2018, we recognized $157.9 million of leasing revenue related to this program.

Services and Other Revenue

Services and other revenue consists of non-warranty after-sales vehicle services, sales of used vehicles, sales of electric vehicle components to other manufacturers, retail merchandise, and sales by our acquired subsidiaries to third party customers. 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, 2018 and 2017.

Energy Generation and Storage Segment

Energy Generation and Storage Sales

Energy generation and storage revenues consists of the sale of solar energy systems and energy storage systems to residential, small commercial, and large commercial and utility grade customers. 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 accepted by the customer. 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. 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 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. 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, 2018 and 2017, deferred revenue related to such customer payments amounted to $148.7 million and $124.0 million, respectively. Revenue recognized from the deferred revenue balance as of January 1, 2018, was $41.4 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. As of December 31, 2018, 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 $117.9 million. Of this amount, we expect to recognize $7.0 million in the next 12 months and the remaining over a period up to 30 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 power purchase agreements ("PPAs"), 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, 2018 and 2017, deferred revenue related to such customer payments amounted to $225.4 million and $206.8 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, 2018 and December 31, 2017, deferred revenue from rebates and incentives amounted to $36.8 million and $27.2 million, respectively.

We capitalize initial direct costs from the origination of solar energy system leases or PPAs, which include the incremental cost of contract administration, referral fees and sales commissions, as an element of solar energy systems, leased and to be leased, net, and subsequently amortize these costs over the term of the related lease or PPA.

Revenue by source

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

| | Year Ended December 31, 2018 |
|---|---|
| Automotive sales without resale value guarantee | $ 15,809,890 |
| Automotive sales with resale value guarantee | 1,403,014 |
| Automotive regulatory credits | 418,618 |
| Energy generation and storage sales | 1,056,543 |
| Services and other | 1,391,041 |
| Total revenues from sales and services | 20,079,106 |
| Automotive leasing | 883,461 |
| Energy generation and storage leasing | 498,701 |
| Total revenues | $ 21,461,268 |

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, and costs for retail merchandise. Cost of services and other revenue also includes direct parts, material and labor costs, manufacturing overhead associated with the sales of electric vehicle components and systems to other manufacturers and sales by our acquired subsidiaries to third party customers.

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.

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 $70.0 million, $66.5 million and $48.0 million in the years ended December 31, 2018, 2017 and 2016, respectively.

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 available-for-sale marketable securities 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 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 (prior to 2017, net of estimated projected forfeitures). Stock-based compensation associated with awards assumed from the acquisition of SolarCity Corporation (“SolarCity”) is measured as of the acquisition date using the relevant assumptions and recognized on a straight-line basis over the remaining requisite service period, net of actual forfeitures in the period (prior to 2017, net of estimated projected forfeitures).

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 is recognized for each pair of performance and market conditions over the longer of the expected achievement period of the performance and market conditions, beginning at the point in time that the relevant performance condition is considered probable of achievement. The fair value of such awards is estimated on the grant date using Monte Carlo simulations (see Note 15, 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. 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 in cash the principal outstanding under the 0.25% Convertible Senior Notes due in 2019, the 1.25% Convertible Senior Notes due in 2021 and the 2.375% Convertible Senior Notes due in 2022, we use the treasury stock method when calculating their potential dilutive effect, if any. Furthermore, in connection with the offerings of our bond hedges, we entered into convertible note hedges (see Note 13, Long-Term Debt Obligations). However, our convertible note hedges are not included when calculating potentially dilutive shares since their effect is always anti-dilutive.

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:

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| Stock-based awards | 9,928,789 | 10,456,363 | 12,091,473 |
| Convertible senior notes | 1,432,656 | 2,315,463 | 841,191 |
| Warrants | 214,213 | 579,137 | 262,702 |

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 thousands):

| | December 31, 2018 | December 31, 2017 | December 31, 2016 | December 31, 2015 |
|---|---|---|---|---|
| Cash and cash equivalents | $ 3,685,618 | $ 3,367,914 | $ 3,393,216 | $ 1,196,908 |

| | | | | |
|---|---|---|---|---|
| Restricted cash (1) | 192,551 | 155,323 | 105,519 | 5,961 |
| Restricted cash, net of current portion | 398,219 | 441,722 | 268,165 | 31,522 |
| Total as presented in the consolidated statements of cash flows | $ 4,276,388 | $ 3,964,959 | $ 3,766,900 | $ 1,234,391 |

(1) In the consolidated balance sheet as of December 31, 2015, the restricted cash and marketable securities balance of $22.6 million included $16.7 million of marketable securities. This balance of marketable securities has been excluded in the table above.

Accounts Receivable and Allowance for Doubtful Accounts

Accounts receivable primarily include amounts related to sales of powertrain systems, sales of energy generation and storage products, receivables from financial institutions and leasing companies offering various financing products to our customers, 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, 2018.

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, 2018 and 2017, 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 on 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, as well as 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 (refer to the Automotive Leasing Revenue section above for details). Operating lease vehicles are recorded at cost less accumulated depreciation. Depreciation is computed using the straight-line method over the expected operating lease term. The total cost of operating lease vehicles recorded on the consolidated balance sheets as of December 31, 2018 and 2017 was $2.55 billion and $4.85 billion, respectively. Accumulated depreciation related to leased vehicles as of December 31, 2018 and 2017 was $457.6 million and $733.3 million, respectively.

Solar Energy Systems, Leased and To Be Leased

We are the lessor of solar energy systems under leases that qualify as operating leases. Our leases are accounted for in accordance with ASC 840. To determine lease classification, we evaluate the lease terms to determine whether there is a transfer of ownership or bargain purchase option at the end of the lease, whether the lease term is greater than 75% of the useful life or whether the present value of the minimum lease payments exceed 90% of the fair value at lease inception. 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 leased to customers | 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 held for lease to customers are installed systems pending interconnection with the respective utility companies and will be depreciated as solar energy systems leased to customers 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 leased to customers when they are completed, interconnected and leased to customers. Initial direct costs related to customer solar energy system lease acquisition costs are capitalized and amortized over the term of the related customer lease agreements.

Property, Plant and Equipment

Property, plant and equipment, 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 |

Depreciation for tooling is computed using the units-of-production method whereby capitalized costs are amortized over the total estimated productive life of the respective assets. As of December 31, 2018, the estimated productive life for Model S and Model X tooling was 325,000 vehicles based on our current estimates of production. As of December 31, 2018, the estimated productive life for Model 3 tooling was 1,000,000 vehicles based on our current estimates of production.

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.

Furthermore, we are 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 these cases, we recognize build-to-suit lease assets under construction and corresponding build-to-suit lease liabilities on the consolidated balance sheet, in accordance with ASC 840. Once construction is completed, if a lease meets certain “sale-leaseback” criteria, we remove the asset and liability and account for the lease as an operating lease. Otherwise, the lease is accounted for as a capital lease.

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 year ended December 31, 2018, we have recognized certain material impairments of our long-lived assets (refer to Note 4, Intangible Assets, for further details). For the years ended December 31, 2017 and 2016, 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 two to thirty years.

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 currency rate to its 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 statement of operations. For the years ended December 31, 2018, 2017 and 2016, we recorded foreign currency transaction gains of $1.5 million, losses of $52.3 million and gains of $26.1 million, respectively.

Warranties

We provide a manufacturer's warranty on all new and used vehicles, production powertrain components and systems and energy storage products we sell. In addition, we also provide a warranty on the installation and components of the solar energy systems we sell for periods typically between 10 to 30 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 sheet. Due to the adoption of the new revenue standard, automotive sales with resale value guarantees that were previously recorded within operating lease assets require a corresponding warranty accrual, which is included in the table below. Warranty expense is recorded as a component of cost of revenues in the consolidated statements of operations. Accrued warranty activity consisted of the following (in thousands):

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| Accrued warranty—beginning of period | $401,790 | $266,655 | $180,754 |
| Assumed warranty liability from acquisition | — | 4,737 | 31,366 |
| Warranty costs incurred | (209,124) | (122,510) | (79,147) |
| Net changes in liability for pre-existing warranties, including expirations and foreign exchange impact | (26,294) | 4,342 | (20,084) |
| Additional warranty accrued from adoption of the new revenue standard | 37,139 | — | — |
| Provision for warranty | 544,315 | 248,566 | 153,766 |
| Accrued warranty—end of period | $747,826 | $401,790 | $266,655 |

For the years ended December 31, 2018, 2017, and 2016, warranty costs incurred for vehicles accounted for as operating leases or collateralized debt arrangements were $21.9 million, $35.5 million and $19.0 million, respectively.

Solar Energy System Performance Guarantees

We guarantee a specified minimum solar energy production output for certain solar energy systems leased or sold to customers, generally for a term of up to 30 years. We monitor the solar energy systems to ensure that these outputs are being achieved. We evaluate if any amounts are due to our customers and make any payments periodically as specified in the customer agreements. As of December 31, 2018 and 2017, we had recognized a liability of $7.5 million and $6.3 million, respectively, within accrued liabilities and other on the consolidated balance sheets, related to these guarantees based on our assessment of the exposures.

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. For SRECs purchased by us, we record these SRECs at their cost, subject to impairment testing. We recognize revenue 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 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.

In accordance with the relevant FASB guidance, we recognize revenue from the monetization of ITCs when (1) persuasive evidence of an arrangement exists, (2) delivery has occurred or services have been rendered, (3) the sales price is fixed or determinable and (4) collection of the related receivable is reasonably assured. An ITC is subject to recapture under the IRC if the underlying solar energy system either ceases to be a qualifying property or undergoes a change in ownership within five years of its placed-in-service date; the recapture amount decreases on each anniversary of the placed-in-service date. Since we have an obligation to ensure that the solar energy system is in-service and operational for a term of five years in order to avoid any recapture of the ITC, we recognize revenue as the recapture amount decreases, assuming the other revenue recognition criteria above have been met. As a result, the monetized ITC is initially recorded as deferred revenue on the consolidated balance sheets, and subsequently, one-fifth of the monetized ITC is recognized as energy generation and storage revenue on the consolidated statement of operations on each anniversary of the solar energy system's placed-in-service date over five years. As discussed in the Revenue Recognition section above, following the adoption of the new revenue standard on January 1, 2018, we no longer defer the monetized ITC as deferred revenue outstanding and have reclassified all ITC deferred revenue as of December 31, 2017 to our opening accumulated deficit.

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 have 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 $195.0 million of transferable tax credits, subject to capital investments by us and our partners for Gigafactory 1 of at least $3.50 billion, which we exceeded during 2017, and specified hiring targets for Gigafactory 1, which we exceeded during 2018. We record these credits as earned when we have evidence there is a market for their sale. Credits are 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 1 are recorded as a reduction to operating expenses. As of December 31, 2018 and 2017, we had earned $195.0 million and $163.0 million of transferable tax credits under these agreements, respectively.

Recent Accounting Pronouncements

In May 2014, the Financial Accounting Standards Board ("FASB") issued ASU No. 2014-09, Revenue from Contracts with Customers, to replace the existing revenue recognition criteria for contracts with customers. In August 2015, the FASB issued ASU No. 2015-14, Deferral of the Effective Date, to defer the effective date of ASU No. 2014-09 to interim and annual periods beginning after December 15, 2017. Subsequently, the FASB issued ASU No. 2016-08, Principal versus Agent Considerations, ASU No. 2016-10, Identifying Performance Obligations and Licensing, ASU No. 2016-11, Rescission of SEC Guidance Because of Accounting Standards Updates 2014-09 and 2014-16 Pursuant to Staff Announcements at the March 3, 2016 EITF Meeting, ASU No. 2016-12, Narrow-Scope Improvements and Practical Expedients, and ASU No. 2016-20, Technical Corrections and Improvements, to clarify and amend the guidance in ASU No. 2014-09. We adopted the ASUs on January 1, 2018 on a modified retrospective basis through a cumulative adjustment to accumulated deficit. The adoption of the ASUs changed the timing of revenue recognition to be at delivery for certain vehicle sales to customers or leasing partners with a resale value guarantee, which now qualify to be accounted for as sales with a right of return as opposed to the prior accounting as operating leases or collateralized lease borrowings. Upon adoption of the ASUs, we recorded a decrease to our beginning accumulated deficit of $623.2 million including income tax effects, which were immaterial. Refer to the Revenue Recognition section above for details.

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 current lease accounting. 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, and ASU No. 2018-20, Narrow-Scope Improvements for Lessors, to clarify and amend the guidance in ASU No. 2016-02. The ASUs are effective for interim and annual periods beginning after December 15, 2018, with early adoption permitted. We will adopt the ASUs on January 1, 2019 on a modified retrospective basis through a cumulative adjustment to our beginning accumulated deficit balance. Prior comparative periods will not be restated under this method, and we will adopt all available practical expedients, as applicable. Further, solar leases that commence on or after January 1, 2019, where we are the lessor and which are currently accounted for as leases, will no longer meet the definition of a lease. Instead, solar leases commencing on or after January 1, 2019 will be accounted for under ASC 606. In addition to recognizing operating leases that were previously not recognized on the consolidated balance sheet, we also expect most of our build-to-suit leases to be de-recognized with a net decrease of approximately of $100.0 million to our beginning accumulated deficit before income tax effects, as our build-to-suit leases will no longer qualify for build-to-suit accounting and will instead be recognized as operating leases or finance leases. Upon adoption, our consolidated balance sheet will include an overall reduction in assets in the range of approximately $400.0 million to $500.0 million and a reduction in liabilities in the range of approximately $500.0 million to $600.0 million. The ASUs are not expected to have a material impact on the consolidated statement of operations or the consolidated statement of cash flows.

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. The ASUs are effective for interim and annual periods beginning after December 15, 2019, with early adoption permitted. Adoption of the ASUs is modified retrospective. We are currently obtaining an understanding of the ASUs and plan to adopt them on January 1, 2020.

In August 2016, the FASB issued ASU No. 2016-15, Classification of Certain Cash Receipts and Cash Payments, to reduce the diversity in practice with respect to the classification of certain cash receipts and cash payments on the statement of cash flows. The ASU is effective for interim and annual periods beginning after December 15, 2017.

Adoption of the ASU is retrospective. We adopted the ASU on January 1, 2018, which did not have a material impact on the consolidated financial statements.

In November 2016, the FASB issued ASU No. 2016-18, Statement of Cash Flows: Restricted Cash, which requires entities to present the aggregate changes in cash, cash equivalents, restricted cash and restricted cash equivalents in the statement of cash flows. As a result, the statement of cash flows now presents restricted cash and restricted cash equivalents as a part of the beginning and ending balances of cash and cash equivalents. The ASU is effective for interim and annual periods beginning after December 15, 2017. Adoption of the ASU is retrospective. We adopted the ASU on January 1, 2018, which resulted in restricted cash being combined with unrestricted cash reconciling beginning and ending balances. Refer to the Restricted Cash section for the reconciliation.

In January 2017, the FASB issued ASU No. 2017-01, Clarifying the Definition of a Business, to clarify which transactions should be accounted for as acquisitions (or disposals) of assets or businesses. The ASU is effective for interim and annual periods beginning after December 15, 2017. Adoption of the ASU is prospective. We adopted the ASU on January 1, 2018, which did not have a material impact on the 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 have not yet selected an adoption date, though the ASU is currently not expected to have a material impact on the consolidated financial statements.

In February 2017, the FASB issued ASU No. 2017-05, Gains and Losses from the Recognition of Nonfinancial Assets, to clarify the scope of asset derecognition guidance and accounting for partial sales of nonfinancial assets. The ASU is effective for interim and annual periods beginning after December 15, 2017. We adopted the ASU on January 1, 2018 on a modified retrospective basis through a cumulative adjustment to accumulated deficit. Upon adoption of the ASU, we recorded a $9.4 million decrease to our beginning accumulated deficit balance.

In May 2017, the FASB issued ASU No. 2017-09, Scope of Modification Accounting, to provide guidance on which changes to the terms or conditions of a share-based payment award require an entity to apply modification accounting. The ASU is effective for interim and annual periods beginning after December 15, 2017. Adoption of the ASU is prospective. We adopted the ASU on January 1, 2018, which did not have a material impact on the consolidated financial statements.

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. The ASU is effective for interim and annual periods beginning after December 15, 2018, with early adoption permitted. Adoption of the ASU will be prospective for us. We plan to adopt the ASU on January 1, 2019, and the ASU is currently not expected to 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 are not currently accounted for as leases. The ASU is effective for the same periods as ASU No. 2016-02, and the ASU will not have a material impact on the 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 are currently obtaining an understanding of the ASU and plan to adopt the ASU prospectively on January 1, 2020.

Note 3 – Business Combinations

Grohmann Acquisition

On January 3, 2017, we completed our acquisition of Grohmann Engineering GmbH (now Tesla Grohmann Automation GmbH or “Grohmann”), which specializes in the design, development and sale of automated manufacturing systems, for $109.5 million in cash. We acquired Grohmann to improve the speed and efficiency of our manufacturing processes.

At the time of acquisition, we entered into an incentive compensation arrangement for up to a maximum of $25.8 million of payments contingent upon continued service with us for 36 months after the acquisition date. Such payments would have been accounted for as compensation expense in the periods earned. However, during the three months ended March 31, 2017, we terminated the incentive compensation arrangement and accelerated the payments thereunder. As a result, we recorded the entire $25.8 million as compensation expense in the three months ended March 31, 2017, which was included within selling, general and administrative expense in the consolidated statements of operations.

Fair Value of Assets Acquired and Liabilities Assumed

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 materiality impact our results of operations. Significant inputs used included the amount of cash flows, the expected period of the cash flows and the discount rates. During the fourth quarter of 2017, we finalized our estimate of the acquisition date fair values of the assets acquired and the liabilities assumed. Prior to finalization, there were no changes to the fair values of the assets acquired and the liabilities assumed.

The allocation of the purchase consideration was based on management's estimate of the acquisition date fair values of the assets acquired and the liabilities assumed, as follows (in thousands):

| | |
|---|---|
| Assets acquired: | |
| Cash and cash equivalents | $334 |
| Accounts receivable | 42,947 |
| Inventory | 10,031 |
| Property, plant and equipment | 44,030 |
| Intangible assets | 21,723 |
| Prepaid expenses and other assets, current and non-current | 1,998 |
| Total assets acquired | 121,063 |
| Liabilities assumed: | |
| Accounts payable | (19,975) |
| Accrued liabilities | (12,403) |
| Debt and capital leases, current and non-current | (9,220) |
| Other long-term liabilities | (10,049) |
| Total liabilities assumed | (51,647) |
| Net assets acquired | 69,416 |
| Goodwill | 40,065 |
| Total purchase price | $109,481 |

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 potential monetization opportunities and from integrating Grohmann's technology into our automotive business as well as the acquired talent. Goodwill is not deductible for U.S. income tax purposes and is not amortized. Rather, 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.

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Identifiable Intangible Assets Acquired

The determination of the fair values of the identified intangible assets and their respective useful lives as of the acquisition date was as follows (in thousands, except for useful lives):

| | Fair Value | Useful Life (in years) |
|---|---|---|
| Developed technology | $12,528 | 10 |
| Software | 3,341 | 3 |
| Customer relations | 3,236 | 6 |
| Trade name | 1,775 | 7 |
| Other | 843 | 2 |
| Total intangible assets | $21,723 | |

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

SolarCity Acquisition

On November 21, 2016 (the "Acquisition Date"), we completed our acquisition of SolarCity. Pursuant to the Agreement and Plan of Merger (the "Merger Agreement"), each issued and outstanding share of SolarCity common stock was converted into 0.110 (the "Exchange Ratio") shares of our common stock. In addition, SolarCity'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 as follows (in thousands, except for share and per share amounts):

| | |
|---|---|
| Total fair value of Tesla common stock issued (11,124,497 shares issued at $185.04 per share) | $2,058,477 |
| Fair value of replacement Tesla stock options and restricted stock units for vested SolarCity awards | 87,500 |
| Total purchase price | $2,145,977 |

Furthermore, the assumed unvested SolarCity awards of $95.9 million are recognized as stock-based compensation expense over the remaining requisite service period. Per ASC 805, the replacement of stock options or other share-based payment awards in conjunction with a business combination represents a modification of share-based payment awards that must be accounted for in accordance with ASC 718, Stock Compensation. As a result of our issuance of replacement awards, a portion of the fair-value-based measure of the replacement awards is included in the purchase consideration. To determine the portion of the replacement awards that is part of the purchase consideration, we measured the fair value of both the replacement awards and the historical awards as of the Acquisition Date. The fair value of the replacement awards, whether vested or unvested, was included in the purchase consideration to the extent that pre-acquisition services were rendered.

Transaction costs of $21.7 million were expensed as incurred to selling, general and administrative expense on the consolidated statements of operations.

Fair Value of Assets Acquired and Liabilities Assumed

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 materiality impact our results of operations. Specifically, we utilized a discounted cash flow model to value the acquired solar energy systems, leased and to be leased, as well as the noncontrolling interests in subsidiaries. Significant inputs used included the amount of cash flows, the expected period of the cash flows and the discount rates.

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

| | |
|---|---|
| Assets acquired: | |
| Cash and cash equivalents | $213,523 |
| Accounts receivable | 74,619 |
| Inventory | 191,878 |
| Solar energy systems, leased and to be leased | 5,781,496 |
| Property, plant and equipment | 1,056,312 |
| MyPower customer notes receivable, net of current portion | 498,141 |
| Restricted cash | 129,196 |
| Intangible assets | 356,510 |
| Prepaid expenses and other assets, current and non-current | 199,864 |
| Total assets acquired | 8,501,539 |
| Liabilities assumed: | |
| Accounts payable | (230,078) |
| Accrued liabilities | (284,765) |
| Debt and capital leases, current and non-current | (3,403,840) |
| Financing obligations | (121,290) |
| Deferred revenue, current and non-current | (271,128) |
| Other liabilities | (950,423) |
| Total liabilities assumed | (5,261,524) |
| Net assets acquired | 3,240,015 |
| Noncontrolling interests redeemable and non-redeemable | (1,066,517) |
| Capped call options associated with 2014 convertible notes | 3,460 |
| Total net assets acquired | 2,176,958 |
| Gain on acquisition | (30,981) |
| Total purchase price | $2,145,977 |

Gain on Acquisition

Since the fair value of the net assets acquired was greater than the purchase price, we recognized a gain on acquisition of $88.7 million in the fourth quarter of 2016, which was recorded within other income (expense), net, on the consolidated statements of operations.

During the fourth quarter of 2017, we finalized our estimate of the Acquisition Date fair values of the assets acquired and the liabilities assumed. Prior to finalization, during the year ended December 31, 2017, we recorded an $11.6 million measurement period adjustment to MyPower customer notes receivable, net of current portion, and a

$46.2 million measurement period adjustment to accrued liabilities. The measurement period adjustments were recorded as losses to other income (expense), net, in the consolidated statement of operations and reduced the gain on acquisition initially recognized in the fourth quarter of 2016.

Identifiable Intangible Assets Acquired

The determination of the fair values of the identified intangible assets and their respective useful lives as of the Acquisition Date was as follows (in thousands, except for useful lives):

| | Fair Value | Useful Life (in years) |
|---|---|---|
| Developed technology | $113,361 | 7 |
| Trade name (1) | 43,500 | 3 |
| Favorable contracts and leases, net | 112,817 | 15 |
| IPR&D | 86,832 | Not applicable |
| Total intangible assets | $356,510 | |

(1) Refer to Note 4, Intangible Assets, for discussion over changes to the assumptions of the useful life of this asset post acquisition.

Unaudited Pro Forma Financial Information

The consolidated financial statements for the year ended December 31, 2016 include SolarCity's results of operations from the Acquisition Date through December 31, 2016. Net revenues and operating loss attributable to SolarCity during this period and included in the consolidated statement of operations were $84.1 million and $68.2 million, respectively.

The following unaudited pro forma financial information for the year ended December 31, 2016 gives effect to our acquisition of SolarCity as if the acquisition had occurred on January 1, 2015 (in thousands, except per share data):

| | |
|---|---|
| Revenue | $7,536,876 |
| Net loss attributable to common stockholders | (702,868) |
| Net loss per share of common stock, basic and diluted | $(4.56) |
| Weighted-average shares used in computing net loss per share of common stock, basic and diluted | 154,090 |

The unaudited pro forma financial information includes adjustments for the depreciation of solar energy systems, leased and to be leased, the intangible assets acquired, the effect of the acquisition on deferred revenue and noncontrolling interests and the transaction costs related to the acquisition. The unaudited pro forma financial information is presented for illustrative purposes only and is not necessarily indicative of the results of operations of future periods. The unaudited pro forma financial information does not give effect to the potential impact of current financial conditions, regulatory matters, synergies, operating efficiencies or cost savings that might be associated with the acquisition. Consequently, actual results could differ from the unaudited pro forma financial information presented.

Note 4 – Intangible Assets

Information regarding our acquired intangible assets was as follows (in thousands):

| | December 31, 2018 | | | | December 31, 2017 | | | |
|---|---|---|---|---|---|---|---|---|
| | Gross Carrying Amount | Accumulated Amortization | Other | Net Carrying Amount | Gross Carrying Amount | Accumulated Amortization | Other | Net Carrying Amount |
| Finite-lived intangible assets: | | | | | | | | |
| Developed technology | $152,431 | $(40,705) | $1,205 | $112,931 | $125,889 | $(19,317) | $1,847 | $108,419 |
| Trade names | 45,275 | (44,056) | 170 | 1,389 | 45,275 | (10,924) | 261 | 34,612 |
| Favorable contracts and leases, net | 112,817 | (16,409) | — | 96,408 | 112,817 | (8,639) | — | 104,178 |
| Other | 35,559 | (11,540) | 719 | 24,738 | 34,099 | (7,775) | 1,137 | 27,461 |
| Total finite-lived intangible assets | 346,082 | (112,710) | 2,094 | 235,466 | 318,080 | (46,655) | 3,245 | 274,670 |
| Indefinite-lived intangible assets: | | | | | | | | |
| IPR&D | 60,290 | — | (13,264) | 47,026 | 86,832 | — | — | 86,832 |
| Total indefinite-lived intangible assets | 60,290 | — | (13,264) | 47,026 | 86,832 | — | — | 86,832 |
| Total intangible assets | $406,372 | $(112,710) | $(11,170) | $282,492 | $404,912 | $(46,655) | $3,245 | $361,502 |

The in-process research and development ("IPR&D"), which we acquired from SolarCity, is accounted for as an indefinite-lived asset until the completion or abandonment of the associated research and development efforts. If the research and development efforts are successfully completed and commercial feasibility is reached, the IPR&D would be amortized over its then estimated useful life. If the research and development efforts are not completed or are abandoned, the IPR&D might be impaired. The fair value of the IPR&D was estimated using the replacement cost method under the cost approach, based on the historical acquisition costs and expenses of the technology adjusted for estimated developer's profit, opportunity cost and obsolescence factor. During the year ended December 31, 2018, we concluded that a portion of the IPR&D was not commercially feasible, and consequently recognized an abandonment loss of $13.3 million in restructuring and other expenses in the consolidated statements of operations. Additionally, $26.5 million of IPR&D was put into production during the year ended December 31, 2018, and we expect to complete the remaining research and development efforts in the first half of 2019. The nature of the research and development efforts consists principally of planning, designing and testing the technology for viability in manufacturing solar cells and modules. If commercial feasibility is not achieved for the remaining IPR&D, we would likely look to other alternative technologies.

The costs associated with one of the trade names acquired by us has been fully amortized as of December 31, 2018 as we phased out the use of such trade name in our sales and marketing efforts.

Total future amortization expense for intangible assets was estimated as follows (in thousands):

| | December 31, 2018 |
|---|---|
| 2019 | $ 34,637 |
| 2020 | 32,729 |
| 2021 | 32,729 |
| 2022 | 32,729 |
| 2023 | 26,537 |
| Thereafter | 76,105 |
| Total | $ 235,466 |

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 thousands):

| | December 31, 2018 | | | | December 31, 2017 | | | |
|---|---|---|---|---|---|---|---|---|
| | 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) | $1,812,828 | 1,812,828 | $— | $ — | $2,163,459 | $2,163,459 | $ — | $ — |
| Interest rate swaps, net | 11,070 | — | 11,070 | — | 59 | — | 59 | — |
| Total | $1,823,898 | $1,812,828 | $11,070 | $ — | $2,163,518 | $2,163,459 | $ 59 | $ — |

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, 2018, there were no transfers between the levels of the fair value hierarchy.

Interest Rate Swaps

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

| December 31, 2018 | | | December 31, 2017 | | |
|---|---|---|---|---|---|
| Aggregate Notional | Gross Asset at Fair | Gross Liability at | Aggregate Notional | Gross Asset at Fair | Gross Liability at |

| | Amount | Value | Fair Value | Amount | Value | Fair Value |
|---|---|---|---|---|---|---|
| Interest rate swaps | $800,293 | $ 12,159 | $ 1,089 | $496,544 | $ 5,304 | $ 5,245 |

For the years ended December 31, 2018, 2017 and 2016, our interest rate swaps activity was as follows (in thousands):

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| Gross gains | $21,558 | $7,192 | $6,995 |
| Gross losses | $11,670 | $13,082 | $— |

Disclosure of Fair Values

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

We estimate the fair value of the convertible senior notes and the 5.30% Senior Notes due in 2025 using commonly accepted valuation methodologies and market-based risk measurements that are indirectly observable, such as credit risk (Level II). In addition, we estimate the fair values of the participation interest, the solar asset-backed notes, the solar loan-backed notes and the automotive asset-backed notes based on rates currently offered for instruments with similar maturities and terms (Level III). The following table presents the estimated fair values and the carrying values (in thousands):

| | December 31, 2018 | | December 31, 2017 | |
|---|---|---|---|---|
| | Carrying Value | Fair Value | Carrying Value | Fair Value |
| Convertible senior notes | $3,660,316 | $4,346,642 | $3,722,673 | $4,488,651 |
| Senior notes | $1,778,756 | $1,575,000 | $1,775,550 | $1,732,500 |
| Participation interest | $18,946 | $18,431 | $17,545 | $17,042 |
| Solar asset-backed notes | $1,183,675 | $1,206,755 | $880,415 | $898,145 |
| Solar loan-backed notes | $203,052 | $211,788 | $236,844 | $248,149 |
| Automotive asset-backed notes | $1,172,160 | $1,179,910 | $— | $— |

Note 6 – Inventory

Our inventory consisted of the following (in thousands):

| | December 31, 2018 | December 31, 2017 |
|---|---|---|
| Raw materials | $ 931,828 | $ 821,396 |
| Work in process | 296,991 | 243,181 |
| Finished goods | 1,581,763 | 1,013,909 |
| Service parts | 302,864 | 185,051 |
| Total | $ 3,113,446 | $ 2,263,537 |

Finished goods inventory included vehicles in transit to fulfill customer orders, new vehicles available for immediate sale at our retail and service center locations, used vehicles and energy storage products. During the year ended December 31, 2018, we made the decision to utilize some of our fleet cars as service loaners on a long-term basis. As a result, we reclassified $121.2 million of finished goods inventory to property, plant and equipment.

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

We write-down inventory for any excess or obsolete inventories or when we believe that the net realizable value of inventories is less than the carrying value. During the years ended December 31, 2018, 2017 and 2016, we recorded write-downs of $78.3 million, $124.1 million and $52.8 million, respectively, in cost of revenues.

Note 7 – Solar Energy Systems, Leased and To Be Leased, Net

Solar energy systems, leased and to be leased, net, consisted of the following (in thousands):

| | December 31, 2018 | December 31, 2017 |
|---|---|---|
| Solar energy systems leased to customers | $ 6,430,729 | $ 6,009,977 |
| Initial direct costs related to customer solar energy system lease acquisition costs | 99,380 | 74,709 |
| | 6,530,109 | 6,084,686 |
| Less: accumulated depreciation and amortization | (495,518) | (220,110) |
| | 6,034,591 | 5,864,576 |
| Solar energy systems under construction | 67,773 | 243,847 |
| Solar energy systems to be leased to customers | 169,032 | 239,067 |
| Solar energy systems, leased and to be leased – net (1) | $ 6,271,396 | $ 6,347,490 |

(1) As of December 31, 2018 and 2017, solar energy systems, leased and to be leased, included $36.0 million of capital leased assets with accumulated depreciation and amortization of $3.8 million and $1.9 million, respectively.

Note 8 – Property, Plant and Equipment

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

| | December 31, 2018 | December 31, 2017 |
|---|---|---|
| Machinery, equipment, vehicles and office furniture | $ 6,328,966 | $ 4,251,711 |
| Tooling | 1,397,514 | 1,255,952 |
| Leasehold improvements | 960,971 | 789,751 |
| Land and buildings | 4,047,006 | 2,517,247 |
| Computer equipment, hardware and software | 487,421 | 395,067 |
| Construction in progress | 807,297 | 2,541,588 |
| | 14,029,175 | 11,751,316 |
| Less: Accumulated depreciation | (2,699,098) | (1,723,794) |
| Total | $ 11,330,077 | $ 10,027,522 |

Construction in progress is primarily comprised of tooling and equipment related to the manufacturing of our vehicles and a portion of Gigafactory 1 construction. Completed assets are transferred to their respective asset classes, and depreciation begins when an asset is ready for its intended use. Construction in progress also includes certain build-to-suit lease costs incurred at our Buffalo manufacturing facility, referred to as Gigafactory 2. During the year ended December 31, 2018, we had significant transfers from construction in progress to the various property, plant and equipment asset classes as assets were placed in service primarily at Gigafactory 1 and Gigafactory 2. 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, 2018 and 2017, we capitalized $54.9 million and $124.9 million, respectively, of interest.

As of December 31, 2018 and 2017, the table above included $1.69 billion and $1.63 billion, respectively, of gross build-to-suit lease assets. As of December 31, 2018 and 2017, the corresponding financing liabilities of $81.7 million and $14.9 million, respectively, were recorded in accrued liabilities and $1.66 billion and $1.67 billion, respectively, were recorded in other long-term liabilities on the consolidated balance sheets.

Depreciation expense during the years ended December 31, 2018, 2017 and 2016 was $1.11 billion, $769.3 million and $477.3 million, respectively. Gross property and equipment under capital leases as of December 31, 2018 and 2017 was $1.52 billion and $688.3 million, respectively. Accumulated depreciation on property and equipment under capital leases as of these dates was $231.6 million and $100.6 million, respectively.

Panasonic has partnered with us on Gigafactory 1 with investments in the production equipment that it uses to manufacture and supply us with battery cells. Under our arrangement with Panasonic, we plan to purchase the full output from their production equipment at negotiated prices. As these terms convey to us the right to use, as defined in ASC 840, Leases, their production equipment, we consider them to be leased assets when production commences. This results in us recording the cost of their production equipment within property, plant and equipment, net, on the consolidated balance sheets with a corresponding liability recorded to long-term debt and capital leases. For all suppliers and partners for which we plan to purchase the full output from their production equipment located at Gigafactory 1, we have applied similar accounting. As of December 31, 2018 and 2017, we had cumulatively capitalized costs of $1.24 billion and $473.3 million, respectively, on the consolidated balance sheets in relation to the production equipment under our Panasonic arrangement. We had cumulatively capitalized total costs for Gigafactory 1, including costs under our Panasonic arrangement, of $4.62 billion and $3.15 billion as of December 31, 2018 and 2017, respectively.

Note 9 – Non-cancellable Operating Lease Payments Receivable

As of December 31, 2018, future minimum lease payments to be received from customers under non-cancellable operating leases for each of the next five years and thereafter were as follows (in thousands):

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

The above table does not include vehicle sales to customers or leasing partners with a resale value guarantee as the cash payments were received upfront. In addition, we assumed through our acquisition of SolarCity and will continue to enter into PPAs with our customers that are accounted for as leases. These 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. Furthermore, the above table does not include performance-based incentives receivable from various utility companies. The amount of contingent rentals recognized as revenue for the years presented were not material.

Note 10 - Accrued Liabilities and Other

As of December 31, 2018 and 2017, accrued liabilities and other current liabilities consisted of the following (in thousands):

| | December 31, 2018 | December 31, 2017 |
|---|---|---|
| Accrued purchases | $ 394,216 | $ 753,408 |
| Payroll and related costs | 448,836 | 378,284 |
| Taxes payable | 348,663 | 185,807 |
| Financing obligation, current portion | 61,761 | 67,313 |
| Accrued warranty | 200,701 | 125,502 |
| Sales return reserve, current portion | 107,800 | — |
| Accrued interest | 77,917 | 75,572 |
| Build-to-suit lease liability, current portion | 81,739 | 14,915 |
| Other current liabilities | 372,620 | 130,565 |
| Total | $ 2,094,253 | $ 1,731,366 |

Taxes payable included value added tax, sales tax, property tax, use tax and income tax payables.

Accrued purchases primarily reflected 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.

Due to the adoption of the new revenue standard, automotive sales with resale value guarantees that are now accounted for as sales with a right of return require a corresponding sales return reserve, which is included in accrued liabilities and other when the reserve is current and other long-term liabilities when the reserve is non-current on the consolidated balance sheets. For automotive sales without a resale value guarantee, we record a reserve against revenue for the estimated variable consideration related to future product returns in accrued liabilities and other on the consolidated balance sheets. See Note 2, Summary of Significant Accounting Policies for details.

## Note 11 – Other Long-Term Liabilities

Other long-term liabilities consisted of the following, net of current portion (in thousands):

| | December 31, 2018 | December 31, 2017 |
|---|---|---|
| Accrued warranty reserve | $ 547,125 | $ 276,289 |
| Build-to-suit lease liability | 1,662,017 | 1,665,768 |
| Deferred rent expense | 59,252 | 46,820 |
| Financing obligation | 50,383 | 67,929 |
| Liability for receipts from an investor | — | 29,713 |
| Sales return reserve | 84,143 | — |
| Other noncurrent liabilities | 307,483 | 356,451 |
| Total other long-term liabilities | $ 2,710,403 | $ 2,442,970 |

The liability for receipts from an investor represents the amounts received from the investor under a lease pass-through fund arrangement for the monetization of ITCs for solar energy systems not yet placed in service. Due to the adoption of the new revenue standard, automotive sales with resale value guarantees that are now accounted for as sales with a right of return require a corresponding sales return reserve, which is included in accrued liabilities and other when the reserve is current and other long-term liabilities when the reserve is non-current on the consolidated balance sheets.

## Note 12 – 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 deposit amounts and timing vary depending on the vehicle model, the energy product and the country of delivery. In the case of a vehicle, customer deposits are fully refundable up to the point the vehicle is placed into the production cycle. In the case of an energy generation or storage product, customer deposits are fully refundable prior to the entry into a purchase agreement or in certain cases for a limited time thereafter (in accordance with applicable laws). Customer deposits are included in current liabilities until refunded or until they are applied towards the customer's purchase balance. As of December 31, 2018 and December 31, 2017, we held \$792.6 million and \$853.9 million, respectively, in customer deposits.

Due to the adoption of the new revenue standard, customer deposits now include prepayments on contracts that can be cancelled without significant penalties, such as vehicle maintenance plans, which were previously reported as deferred revenue. As a result, the adoption of the new revenue standard increased the customer deposits balance as of December 31, 2018 by \$58.4 million as compared to what the balance would have been under ASC 605, Revenue Recognition (see Note 2, Summary of Significant Accounting Policies).

Note 13 –Long-Term Debt Obligations

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

| | Unpaid Principal Balance | Net Carrying Value Current | Net Carrying Value Long-Term | Unused Committed Amount* | Contractual Interest Rates | | Contractual Maturity Date |
|---|---|---|---|---|---|---|---|
| Recourse debt: | | | | | | | |
| 0.25% Convertible Senior Notes due in 2019 ("2019 Notes") | 920,000 | 912,625 | — | — | 0.25 | % | March 2019 |
| 1.25% Convertible Senior Notes due in 2021 ("2021 Notes") | 1,380,000 | — | 1,243,496 | — | 1.25 | % | March 2021 |
| 2.375% Convertible Senior Notes due in 2022 ("2022 Notes") | 977,500 | — | 871,326 | — | 2.375 | % | March 2022 |
| 5.30% Senior Notes due in 2025 ("2025 Notes") | 1,800,000 | — | 1,778,756 | — | 5.30 | % | August 2025 |
| Credit Agreement | 1,540,000 | — | 1,540,000 | 230,999 | 1% plus LIBOR | | June 2020 |
| Vehicle and other Loans | 76,203 | 1,203 | 75,000 | — | 1.8%-7.6% | | January 2019-December 2021 |
| 1.625% Convertible Senior Notes due in 2019 | 565,992 | 541,070 | — | — | 1.625 | % | November 2019 |
| Zero-Coupon Convertible Senior Notes due in 2020 | 103,000 | — | 91,799 | — | 0.0 | % | December 2020 |
| Solar Bonds | 24,725 | 119 | 25,190 | — | 2.6%-5.8% | | January 2019-January 2031 |
| Total recourse debt | 7,387,420 | 1,455,017 | 5,625,567 | 230,999 | | | |
| Non-recourse debt: | | | | | | | |
| Warehouse Agreements | 92,000 | 13,604 | 78,396 | 1,008,000 | 3.9%-4.2% | | September 2020 |
| Canada Credit Facility | 73,220 | 31,766 | 41,454 | — | 3.6%-5.9% | | November 2022 |
| Term Loan due in 2019 | 180,624 | 180,624 | — | — | 6.1 | % | January 2019 |
| Term Loan due in 2021 | 169,050 | 6,876 | 161,453 | — | 6.0 | % | January 2021 |
| Cash equity debt | 466,837 | 10,911 | 441,472 | — | 5.3%-5.8% | | July 2033-January 2035 |
| Solar asset-backed notes | 1,214,071 | 28,761 | 1,154,914 | — | 4.0%-7.7% | | September 2024- |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | February 2048 |
| Solar loan-backed notes | 210,249 | 9,888 | 193,164 | — | 4.8%-7.5% | September 2048-<br>September 2049 |
| Automotive asset-backed notes | 1,177,937 | 467,926 | 704,234 | — | 2.3%-7.9% | December 2019-June 2022 |
| Solar Renewable Energy Credit and<br>other Loans | 26,742 | 16,612 | 9,836 | 17,633 | 5.1%-7.9% | December 2019-July 2021 |
| Total non-recourse debt | 3,610,730 | 766,968 | 2,784,923 | 1,025,633 | | |
| Total debt | $10,998,150 | $2,221,985 | $8,410,490 | $1,256,632 | | |

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The following is a summary of our debt as of December 31, 2017 (in thousands):

| | Unpaid Principal Balance | Net Carrying Value Current | Long-Term | Unused Committed Amount* | Contractual Interest Rates | | Contractual Maturity Date |
|---|---|---|---|---|---|---|---|
| Recourse debt: | | | | | | | |
| 1.50% Convertible Senior Notes due in 2018 ("2018 Notes") | $5,512 | $5,442 | $— | $— | 1.50 | % | June 2018 |
| 2019 Notes | 920,000 | — | 869,092 | — | 0.25 | % | March 2019 |
| 2021 Notes | 1,380,000 | — | 1,186,131 | — | 1.25 | % | March 2021 |
| 2022 Notes | 977,500 | — | 841,973 | — | 2.375 | % | March 2022 |
| 2025 Notes | 1,800,000 | — | 1,775,550 | — | 5.30 | % | August 2025 |
| Credit Agreement | 1,109,000 | — | 1,109,000 | 729,929 | 1% plus LIBOR | | June 2020 |
| Vehicle and other Loans | 16,205 | 15,944 | 261 | — | 1.8%-7.6% | | January 2018- September 2019 |
| 2.75% Convertible Senior Notes due in 2018 | 230,000 | 222,171 | — | — | 2.75% | | November 2018 |
| 1.625% Convertible Senior Notes due in 2019 | 566,000 | — | 511,389 | — | 1.625% | | November 2019 |
| Zero-Coupon Convertible Senior Notes due in 2020 | 103,000 | — | 86,475 | — | 0.0% | | December 2020 |
| Related Party Promissory Notes due in February 2018 | 100,000 | 100,000 | — | — | 6.5% | | February 2018 |
| Solar Bonds | 32,016 | 7,008 | 24,940 | — | 2.6%-5.8% | | March 2018- January 2031 |
| Total recourse debt | 7,239,233 | 350,565 | 6,404,811 | 729,929 | | | |
| Non-recourse debt: | | | | | | | |
| Warehouse Agreements | 673,811 | 195,382 | 477,867 | 426,189 | 3.1 | % | September 2019 |
| Canada Credit Facility | 86,708 | 31,106 | 55,603 | — | 3.6%-5.1% | | November 2021 |
| Term Loan due in December 2018 | 157,095 | 156,884 | — | 19,534 | 4.8% | | December 2018 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Term Loan due in January 2021 | 176,290 | 5,885 | 169,352 | — | 4.9% | January 2021 |
| Revolving Aggregation Credit Facility | 161,796 | — | 158,733 | 438,204 | 4.1%-4.5% | December 2019 |
| Solar Renewable Energy Credit Loan Facility | 38,575 | 15,858 | 22,774 | — | 7.3% | July 2021 |
| Cash equity debt | 482,133 | 12,334 | 454,421 | — | 5.3%-5.8% | July 2033-January 2035 |
| Solar asset-backed notes | 907,241 | 23,829 | 856,586 | — | 4.0%-7.7% | November 2038-February 2048 |
| Solar loan-backed notes | 244,498 | 8,006 | 228,838 | — | 4.8%-7.5% | September 2048-September 2049 |
| Total non-recourse debt | 2,928,147 | 449,284 | 2,424,174 | 883,927 | | |
| Total debt | $10,167,380 | $799,849 | $8,828,985 | $1,613,856 | | |

* 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 specified assets of our subsidiaries. The differences between the unpaid principal balances and the net carrying values are due to convertible senior note conversion features, debt discounts or deferred financing costs. As of December 31, 2018, we were in compliance with all financial debt covenants, which include minimum liquidity and expense-coverage balances and ratios.

2018 Notes, Bond Hedges and Warrant Transactions

In May 2013, we issued $660.0 million in aggregate principal amount of 1.50% Convertible Senior Notes due in June 2018 in a public offering. The net proceeds from the issuance, after deducting transaction costs, were $648.0 million.

Each $1,000 of principal of the 2018 Notes is initially convertible into 8.0306 shares of our common stock, which is equivalent to an initial conversion price of $124.52 per share, subject to adjustment upon the occurrence of specified events. Holders of the 2018 Notes may convert, at their option, on or after March 1, 2018. Further, holders of the 2018 Notes may convert, at their option, prior to March 1, 2018 only under the following circumstances: (1) during any quarter beginning after September 30, 2013, 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 2018 Notes is less than 98% of the product of the closing price of our common stock 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 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 2018 Notes may require us to repurchase all or a portion of their 2018 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 2018 Notes in connection with such an event in certain circumstances.

In accordance with GAAP relating to embedded conversion features, we initially valued and bifurcated the conversion feature associated with the 2018 Notes. We recorded to stockholders' equity $82.8 million for the conversion feature. The resulting debt discount is being amortized to interest expense at an effective interest rate of 4.29%.

In connection with the offering of the 2018 Notes, we entered into convertible note hedge transactions whereby we have the option to purchase initially (subject to adjustment for certain specified events) 5.3 million shares of our common stock at a price of $124.52 per share. The cost of the convertible note hedge transactions was $177.5 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) 5.3 million shares of our common stock at a price of $184.48 per share. We received $120.3 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 2018 Notes and to effectively increase the overall conversion price from $124.52 to $184.48 per share. As these transactions meet certain accounting criteria, the convertible note hedges and warrants are recorded in stockholders' equity and are not accounted for as derivatives. The net cost incurred in connection with the convertible note hedge and warrant transactions was recorded as a reduction to additional paid-in capital on the consolidated balance sheet.

During the first quarter of 2018, $5.2 million in aggregate principal amount of the 2018 Notes were converted for $5.2 million in cash and 25,745 shares of our common stock. As a result, we recognized a loss on debt extinguishment of less than $0.1 million.

As of June 30, 2018, the 2018 Notes had been completely settled.

2019 Notes, 2021 Notes, Bond Hedges and Warrant Transactions

In March 2014, we issued $800.0 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 $120.0 million in aggregate principal amount of the 2019 Notes and $180.0 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 $905.8 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 may elect to convert on or after December 1, 2018 for the 2019 Notes and December 1, 2020 for the 2021 Notes. The settlement of such an election to convert the 2019 Notes would be in cash and/or shares of our common stock, which we intend to settle 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, 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), on the maturity date. 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 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, 2018, none of the conditions permitting the holders of 2021 Notes to early convert had been met. Therefore, 2021 Notes were 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 $188.1 million for the 2019 Notes' conversion feature and $369.4 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 2014, we entered into convertible note hedge transactions whereby we have the option to purchase initially (subject to adjustment for certain specified events) a total of 5.6 million shares of our common stock at a price of $359.87 per share. The total cost of the convertible note hedge transactions was $524.7 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) 2.2 million shares of our common stock at a price of $512.66 per share for the 2019 Notes and 3.3 million shares of our common stock at a price of $560.64 per share for 2021 Notes. We received $338.4 million in total cash proceeds from the sales of these warrants. Similarly, in connection with the issuance of the additional notes in April 2014, we entered into convertible note hedge transactions and paid a total of $78.7 million. In addition, we sold warrants to purchase initially (subject to adjustment for certain specified events) 0.3 million shares of our common stock at a price of $512.66 per share for the 2019 Notes and 0.5 million shares of our common stock at a price of $560.64 per share for the 2021 Notes. We received $50.8 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.

2022 Notes, Bond Hedges and Warrant Transactions

In March 2017, we issued $977.5 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 $965.9 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 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, 2018, 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 $145.6 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 $204.1 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 $52.9 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.

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.

On May 3, 2018, the Company entered into the Ninth Amendment (the "Ninth Amendment") to the Credit Agreement. The Ninth Amendment amended the Credit Agreement to permit Tesla to include in its discretion: (i) the Fremont Factory facilities in the U.S. borrowing base and/or (ii) vehicles in and in-transit to Belgium in the Dutch borrowing base.

Vehicle and Other Loans

We have entered into various vehicle and other loan agreements with various financial institutions. The vehicle loans are secured by the vehicles financed and used vehicles owned by us.

2.75% Convertible Senior Notes due in 2018

In October 2013, SolarCity issued $230.0 million in aggregate principal amount of 2.75% Convertible Senior Notes due on November 1, 2018 in a public offering.

Each $1,000 of principal of the convertible senior notes is now convertible into 1.7838 shares of our common stock, which is equivalent to a conversion price of $560.64 per share (subject to adjustment upon the occurrence of specified events related to dividends, tender offers or exchange offers). Holders of the convertible senior notes may convert, at their option, at any time up to and including the second trading day prior to the maturity date. If certain events that would constitute a make-whole fundamental change (such as significant changes in ownership, corporate structure or tradability of our common stock) occur prior to the maturity date, we would increase the conversion rate for a holder who elects to convert its convertible senior notes in connection with such an event in certain circumstances. The maximum conversion rate is capped at 2.3635 shares for each $1,000 of principal of the convertible senior notes, which is equivalent to a minimum conversion price of $423.10 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.

In November 2018, the 2.75% Convertible Senior Notes due in 2018 matured and aggregate outstanding principal of $230.0 million was fully paid off.

1.625% Convertible Senior Notes due in 2019

In September 2014, SolarCity issued $500.0 million and in October 2014, SolarCity issued an additional $66.0 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 is now 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 is 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 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.

In connection with the issuance of the convertible senior notes in September and October 2014, SolarCity entered into capped call option agreements to reduce the potential dilution upon the conversion of the convertible senior notes. Specifically, upon the exercise of the capped call options, we would now receive shares of our common stock equal to 745,377 shares multiplied by (a) (i) the lower of $1,146.18 or the then market price of our common stock less (ii) $759.36 and divided by (b) the then market price of our common stock. The results of this formula are that we would receive more shares as the market price of our common stock exceeds $759.36 and approaches $1,146.18, but we would receive less shares as the market price of our common stock exceeds $1,146.18. Consequently, if the convertible senior notes are converted, then the number of shares to be issued by us would be effectively partially offset by the shares received by us under the capped call options. We can also elect to receive the equivalent value of cash in lieu of shares. The capped call options expire on various dates ranging from September 4, 2019 to October 29, 2019, and the formula above would be adjusted in the event of a merger a tender offer nationalization; insolvency;

delisting of our common stock changes in law failure to deliver insolvency filing stock splits, combinations, dividends, repurchases or similar events or an announcement of certain of the preceding actions. Although intended to reduce the net number of shares issued after a conversion of the convertible senior notes, the capped call options were separately negotiated transactions, are not a part of the terms of the convertible senior notes, do not affect the rights of the convertible senior note holders and take effect regardless of whether the convertible senior notes are actually converted. The capped call options meet the criteria for equity classification because they are indexed to our common stock and we always control whether settlement will be in shares or cash.

Zero-Coupon Convertible Senior Notes due in 2020

In December 2015, SolarCity issued $113.0 million in aggregate principal amount of Zero-Coupon Convertible Senior Notes due on December 1, 2020 in a private placement. $13.0 million of the convertible senior notes were issued to related parties (see Note 21, 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.

Related Party Promissory Notes

In April, 2017, our CEO, SolarCity's former CEO and SolarCity's former Chief Technology Officer exchanged their $100.0 million (collectively) in aggregate principal amount of 6.50% Solar Bonds due in February 2018 for promissory notes in the same amounts and with substantially the same terms.

During the year ended December 31, 2018, we fully repaid the $100.0 million in aggregate principal amount of 6.50% promissory notes held by our CEO, SolarCity's former CEO and SolarCity's former Chief Technology Officer.

Solar Bonds

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. See Note 21, Related Party Transactions, for Solar Bonds issued to related parties.

Warehouse Agreements

In August 2016, our subsidiaries entered into the 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.

During the year ended December 31, 2018, we repaid $1.16 billion of the principal outstanding under the Warehouse Agreements.

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.

Term Loan due in 2019

In March 2016, a subsidiary of SolarCity entered into an agreement for a term loan. The term loan bears interest at an annual rate of the lender’s cost of funds plus 3.25%. The fee for undrawn commitments is 0.85% per annum. On March 31, 2017, the agreement was amended to upsize the committed amount, extend the availability period and extend the maturity date. The term loan is secured by substantially all of the assets of the subsidiary and is non-recourse to our other assets. The term loan had an original maturity date of December 2018 and on December 19, 2018, the maturity date was extended to January 2019. On January 30, 2019, the maturity date of the term loan was further extended to April 2019.

Term Loan due in 2021

In January 2016, a subsidiary of SolarCity entered into an agreement with a syndicate of banks for a term loan. The term loan bears interest at an annual rate of three-month LIBOR plus 3.50%. The term loan is secured by substantially all of the assets of the subsidiary, including its interests in certain financing funds, and is non-recourse to our other assets.

Revolving Aggregation Credit Facility

In May 2015, a subsidiary of SolarCity entered into an agreement with a syndicate of banks for a revolving aggregation credit facility. On March 23, 2016 and June 23, 2017, the agreement was amended to modify the interest rates and extend the availability period and the maturity date. The revolving aggregation credit facility bears interest at an annual rate of 2.75% plus (i) for commercial paper loans, the commercial paper rate and (ii) for LIBOR loans, at our option, three-month LIBOR or daily LIBOR. The revolving aggregation credit facility is secured by certain assets of certain of our subsidiaries and was non-recourse to our other assets. On December 28, 2018, the aggregate outstanding principal amount of $210.2 million was repaid and the Revolving Aggregation Credit Facility was terminated.

Cash Equity Debt I

In connection with the cash equity financing on May 2, 2016, SolarCity issued $121.7 million in aggregate principal amount of debt that bears interest at a fixed rate. This debt is secured by, among other things, our interests in certain financing funds and is non-recourse to our other assets.

Cash Equity Debt II

In connection with the cash equity financing on September 8, 2016, SolarCity issued $210.0 million in aggregate principal amount of debt that bears interest at a fixed rate. This debt is secured by, among other things, our interests in certain financing funds and is non-recourse to our other assets.

Cash Equity Debt III

In connection with the cash equity financing on December 16, 2016, we issued $170.0 million in aggregate principal amount of debt that bears interest at a fixed rate. This debt is secured by, among other things, our interests in certain financing funds and is non-recourse to our other assets.

Solar Asset-backed Notes, Series 2013-1

In November 2013, SolarCity pooled and transferred qualifying solar energy systems and the associated customer contracts into a Special Purpose Entity (“SPE”) and issued $54.4 million in aggregate principal amount of Solar Asset-backed Notes, Series 2013-1, backed by these solar assets to investors. The SPE is wholly owned by us and is consolidated in the financial statements. As of December 31, 2018, these solar assets had a carrying value of $85.1 million and are included within solar energy systems, leased and to be leased, net, on the consolidated balance sheets. The Solar Asset-backed Notes were issued at a discount of 0.05%. The cash flows generated by these solar assets are used to service the monthly principal and interest payments on the Solar Asset-backed Notes and satisfy the SPE’s expenses, and any remaining cash is distributed to one of our wholly owned subsidiaries. We recognize revenue earned from the associated customer contracts in accordance with our revenue recognition policy. The SPE’s assets and cash flows are not available to our other creditors, and the creditors of the SPE, including the Solar Asset-backed Note holders, have no recourse to our other assets. SolarCity contracted with the SPE to provide operations & maintenance and administrative services for the solar energy systems.

In connection with the pooling of the solar assets that were transferred to the SPE in November 2013, SolarCity terminated a lease pass-through arrangement with an investor. The lease pass-through arrangement had been accounted for as a borrowing, and the amount outstanding under the lease pass-through arrangement was recorded as a lease pass-through financing obligation. The balance that was then outstanding under the lease pass-through arrangement was $56.4 million. SolarCity paid the investor an aggregate of $40.2 million, and the remaining balance is paid over time using the net cash flows generated by the assets previously leased under the lease pass-through arrangement, after payment of the principal and interest on the Solar Asset-backed Notes and expenses related to the assets and the Solar Asset-backed Notes; this was contractually documented as a right to participate in the future cash flows of the SPE (“participation interest”). The participation interest was recorded as a component of other long-term liabilities for the non-current portion and accrued liabilities for the current portion. We account for the participation interest as a liability because the investor has no voting or management rights in the SPE, the participation interest would terminate upon the investor achieving a specified return and the investor has the option to put the participation interest to us on August 3, 2021 for the amount necessary for the investor to achieve the specified return, which would require us to settle the participation interest in cash. In addition, under the terms of the participation interest, we have the option to purchase the participation interest from the investor for the amount necessary for the investor to achieve the specified return.

Solar Asset-backed Notes, 2014-1

In April 2014, SolarCity pooled and transferred qualifying solar energy systems and the associated customer contracts into a SPE and issued $70.2 million in aggregate principal amount of Solar Asset-backed Notes, Series 2014-1, backed by these solar assets to investors. The SPE is wholly owned by us and is consolidated in the financial statements. As of December 31, 2018, these solar assets had a carrying value of $104.4 million and are included within solar energy systems, leased and to be leased, net, in the consolidated balance sheets. The Solar Asset-backed Notes were issued at a discount of 0.01%. The cash flows generated by these solar assets are used to service the monthly principal and interest payments on the Solar Asset-backed Notes and satisfy the SPE’s expenses, and any remaining cash is distributed to one of our wholly owned subsidiaries. We recognize revenue earned from the associated customer contracts in accordance with our revenue recognition policy. The SPE’s assets and cash flows are not available to our other creditors, and the creditors of the SPE, including the Solar Asset-backed Note holders, have no recourse to our other assets. SolarCity contracted with the SPE to provide operations & maintenance and administrative services for the solar energy systems.

Solar Asset-backed Notes, Series 2014-2

In July 2014, SolarCity pooled and transferred qualifying solar energy systems and the associated customer contracts into a SPE and issued $160.0 million in aggregate principal amount of Solar Asset-backed Notes, Series 2014-2, Class A, and $41.5 million in aggregate principal amount of Solar Asset-backed Notes, Series 2014-2, Class B, backed by these solar assets to investors. The SPE is wholly owned by us and is consolidated in the financial statements. As of December 31, 2018, these solar assets had a carrying value of $244.5 million and are included within solar energy systems, leased and to be leased, net, in the consolidated balance sheets. The Solar Asset-backed Notes were issued at a discount of 0.01%. These solar assets and the associated customer contracts are leased to an investor under a lease pass-through arrangement that we have accounted for as a borrowing. The rent paid by the investor under the lease pass-through arrangement is used (and following the expiration of the lease pass-through arrangement, the cash generated by these solar assets will be used) to service the semi-annual principal and interest payments on the Solar Asset-backed Notes and satisfy the SPE's expenses, and any remaining cash is distributed to one of our wholly owned subsidiaries. We recognize revenue earned from the associated customer contracts in accordance with our revenue recognition policy. The SPE's assets and cash flows are not available to our other creditors, and the creditors of the SPE, including the Solar Asset-backed Note holders, have no recourse to our other assets. SolarCity contracted with the SPE to provide operations & maintenance and administrative services for certain of the solar energy systems.

Solar Asset-backed Notes, Series 2015-1

In August 2015, SolarCity pooled and transferred its interests in certain financing funds into a SPE and issued $103.5 million in aggregate principal amount of Solar Asset-backed Notes, Series 2015-1, Class A, and $20.0 million in aggregate principal amount of Solar Asset-backed Notes, Series 2015-1, Class B, backed by these solar assets to investors. The SPE is wholly owned by us and is consolidated in the financial statements. The Solar Asset-backed Notes were issued at a discount of 0.05% for Class A and 1.46% for Class B. The cash distributed by the underlying financing funds to the SPE are used to service the semi-annual principal and interest payments on the Solar Asset-backed Notes and satisfy the SPE's expenses, and any remaining cash is distributed to one of our wholly owned subsidiaries. The SPE's assets and cash flows are not available to our other creditors, and the creditors of the SPE, including the Solar Asset-backed Note holders, have no recourse to our other assets.

Solar Asset-backed Notes, Series 2016-1

In February 2016, SolarCity transferred qualifying solar energy systems and the associated customer contracts into a SPE and issued $52.2 million in aggregate principal amount of Solar Asset-backed Notes, Series 2016-1, backed by these solar assets to investors. The SPE is wholly owned by us and is consolidated in the financial statements. As of December 31, 2018, these solar assets had a carrying value of $80.3 million and are included within solar energy systems, leased and to be leased, net, on the consolidated balance sheets. The Solar Asset-backed Notes were issued at a discount of 6.71%. These solar assets and the associated customer contracts are leased to an investor under a lease pass-through arrangement that we have accounted for as a borrowing. The rent paid by the investor under the lease pass-through arrangement is used (and following the expiration of the lease pass-through arrangement, the cash generated by these solar assets will be used) to service the semi-annual principal and interest payments on the Solar Asset-backed Notes and satisfy the SPE's expenses, and any remaining cash is distributed to one of our wholly owned subsidiaries. We recognize revenue earned from the associated customer contracts in accordance with our revenue recognition policy. The SPE's assets and cash flows are not available to our other creditors, and the creditors of the SPE, including the Solar Asset-backed Note holders, have no recourse to our other assets. SolarCity contracted with the SPE to provide operations & maintenance and administrative services for certain of the solar energy systems.

Solar Asset-backed Notes, Series 2017-1

In November 2017, we pooled and transferred our interests in certain financing funds into a SPE and issued $265.0 million in aggregate principal amount of Solar Asset-backed Notes, Series 2017-1, Class A, and $75.0 million in aggregate principal amount of Solar Asset-backed Notes, Series 2017-1, Class B, backed by these solar assets to investors. The SPE is wholly owned by us and is consolidated in the financial statements. The Solar Asset-backed Notes were issued at a discount of 0.01% for Class A and 0.04% for Class B. The cash distributed by the underlying financing funds to the SPE are used to service the semi-annual principal and interest payments on the Solar Asset-backed Notes and satisfy the SPE’s expenses, and any remaining cash is distributed to one of our wholly owned subsidiaries. The SPE’s assets and cash flows are not available to our other creditors, and the creditors of the SPE, including the Solar Asset-backed Note holders, have no recourse to our other assets.

Solar Asset-backed Notes, Series 2017-2

In December 2017, we transferred qualifying solar energy systems and the associated customer contracts into a SPE and issued $99.0 million in aggregate principal amount of Solar Asset-backed Notes, Series 2017-2, Class A, and $31.9 million in aggregate principal amount of Solar Asset-backed Notes, Series 2017-2, Class B, backed by these solar assets to investors. The SPE is wholly owned by us and is consolidated in the financial statements. As of December 31, 2018, these solar assets had a carrying value of $204.7 million and are included within solar energy systems, leased and to be leased, net, on the consolidated balance sheets. The Solar Asset-backed Notes were issued at a discount of 0.01% for Class A and 0.04% for Class B. Most of these solar assets and the associated customer contracts are leased to investors under lease pass-through arrangements that we have accounted for as borrowings. The rent paid by the investors under the lease pass-through arrangements is used (and following the expiration of the lease pass-through arrangements, the cash generated by these solar assets will be used) to service the semi-annual principal and interest payments on the Solar Asset-backed Notes and satisfy the SPE’s expenses, and any remaining cash is distributed to one of our wholly owned subsidiaries. We recognize revenue earned from the associated customer contracts in accordance with our revenue recognition policy. The SPE’s assets and cash flows are not available to our other creditors, and the creditors of the SPE, including the Solar Asset-backed Note holders, have no recourse to our other assets. We contracted with the SPE to provide operations & maintenance and administrative services for certain of the solar energy systems.

Solar Asset-backed Notes, Series 2018-1

In December 2018, we pooled and transferred our interests in certain financing funds into a SPE and issued $334.1 million in aggregate principal amount of Solar Asset-backed Notes, Series 2018-1 backed by these solar assets to investors. The SPE is wholly owned by us and is consolidated in the financial statements. The Solar Asset-backed Notes were issued at par value. The cash distributed by the underlying financing funds to the SPE are used to service the semi-annual principal and interest payments on the Solar Asset-backed Notes and satisfy the SPE’s expenses, and any remaining cash is distributed to one of our wholly owned subsidiaries. The SPE’s assets and cash flows are not available to our other creditors, and the creditors of the SPE, including the Solar Asset-backed Note holders, have no recourse to our other assets.

Solar Loan-backed Notes, Series 2016-A

In January 2016, SolarCity pooled and transferred certain MyPower customer notes receivable into a SPE and issued $151.6 million in aggregate principal amount of Solar Loan-backed Notes, Series 2016-A, Class A, and $33.4 million in aggregate principal amount of Solar Loan-backed Notes, Series 2016-A, Class B, backed by these notes receivable to investors. The SPE is wholly owned by us and is consolidated in the financial statements. The Solar Loan-backed Notes were issued at a discount of 3.22% for Class A and 15.90% for Class B. The payments received by the SPE from these notes receivable are used to service the semi-annual principal and interest payments on the Solar Loan-backed Notes and satisfy the SPE's expenses, and any remaining cash is distributed to one of our wholly owned subsidiaries. The SPE's assets and cash flows are not available to our other creditors, and the creditors of the SPE, including the Solar Loan-backed Note holders, have no recourse to our other assets.

Solar Loan-backed Notes, Series 2017-A

In January 2017, we pooled and transferred certain MyPower customer notes receivable into a SPE and issued $123.0 million in aggregate principal amount of Solar Loan-backed Notes, Series 2017-A, Class A; $8.8 million in aggregate principal amount of Solar Loan-backed Notes, Series 2017-A, Class B, and $13.2 million in aggregate principal amount of Solar Loan-backed Notes, Series 2017-A, Class C, backed by these notes receivable to investors. The SPE is wholly owned by us and is consolidated in the financial statements. Accordingly, we did not recognize a gain or loss on the transfer of these notes receivable. The Solar Loan-backed Notes were issued at a discount of 1.87% for Class A, 1.86% for Class B and 8.13% for Class C. The payments received by the SPE from these notes receivable are used to service the semi-annual principal and interest payments on the Solar Loan-backed Notes and satisfy the SPE's expenses, and any remaining cash is distributed to one of our wholly owned subsidiaries. The SPE's assets and cash flows are not available to our other creditors, and the creditors of the SPE, including the Solar Loan-backed Note holders, have no recourse to our other assets.

Automotive Asset-backed Notes, Series 2018-A

In February 2018, we transferred receivables related to certain leased vehicles into a SPE and issued $546.1 million in aggregate principal amount of Automotive Asset-backed Notes, Series 2018-A, backed by these automotive assets to investors. The SPE is wholly owned by us and is consolidated in the financial statements. The proceeds from the issuance, net of discounts and fees, were $543.1 million. The cash flows generated by these automotive assets are used to service the monthly principal and interest payments on the Automotive Asset-backed Notes and satisfy the SPE's expenses, and any remaining cash is distributed to one of our wholly owned subsidiaries. We recognize revenue earned from the associated customer lease contracts in accordance with our revenue recognition policy. The SPE's assets and cash flows are not available to our other creditors, and the creditors of the SPE, 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.

Automotive Asset-backed Notes, Series 2018-B

In December 2018, we transferred receivables related to certain leased vehicles into a SPE and issued $837.4 million in aggregate principal amount of Automotive Asset-backed Notes, Series 2018-B, backed by these automotive assets to investors. The SPE is wholly owned by us and is consolidated in the financial statements. The proceeds from the issuance, net of discounts and fees, were $833.1 million. The cash flows generated by these automotive assets are used to service the monthly principal and interest payments on the Automotive Asset-backed Notes and satisfy the SPE's expenses, and any remaining cash is distributed to one of our wholly owned subsidiaries. We recognize revenue earned from the associated customer lease contracts in accordance with our revenue recognition policy. The SPE's assets and cash flows are not available to our other creditors, and the creditors of the SPE, 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.

Solar Renewable Energy Credit and other Loans

We have entered into various solar renewable energy credit and other loan agreements with various financial institutions. 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 solar renewable energy credits, 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 2018 Notes, the 2019 Notes, the 2021 Notes and the 2022 Notes (in thousands):

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| Contractual interest coupon | $42,694 | $39,129 | $27,060 |
| Amortization of debt issuance costs | 6,629 | 6,932 | 8,567 |
| Amortization of debt discounts | 123,560 | 114,023 | 99,811 |
| Total | $172,883 | $160,084 | $135,438 |

Pledged Assets

As of December 31, 2018 and 2017, we had pledged or restricted $5.23 billion and $4.05 billion of our assets (consisted principally of restricted cash, receivables, inventory, SRECs, solar energy systems, property and equipment) as collateral for our outstanding debt.

Note 14 – Common Stock

In May 2016, we completed a public offering of common stock and sold a total of 7,915,004 shares of our common stock for total cash proceeds of approximately $1.7 billion, net of underwriting discounts and offering costs.

On November 21, 2016, we completed the acquisition of SolarCity (see Note 3, Business Combinations) and exchanged 11,124,497 shares of our common stock for 101,131,791 shares of SolarCity common stock in accordance with the terms of the Merger Agreement.

In March 2017, we completed a public offering of our common stock and issued a total of 1,536,259 shares for total cash proceeds of $399.6 million (including 95,420 shares purchased by our CEO for $25.0 million), net of underwriting discounts and offering costs.

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 $10.0 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 $10.3 million (see Note 13, Long-Term Debt Obligations).

During 2017, we issued 1,510,274 shares of our common stock and paid $32.7 million in cash pursuant to conversions by or exchange agreements entered into with holders of $199.5 million in aggregate principal amount of the 2018 Notes (see Note 13, Long-Term Debt Obligations). As a result, we recorded an increase to additional paid-in capital of $163.0 million. In addition, we settled portions of the bond hedges and warrants entered into in connection with the 2018 Notes, resulting in a net cash inflow of $56.8 million (which was recorded as an increase to additional paid-in capital), the issuance of 34,393 shares of our common stock and the receipt of 169,890 shares of our common stock.

During the fourth quarter of 2017, we issued 34,772 shares of our common stock as part of the purchase consideration for an acquisition.

During the year ended 2018, $5.2 million in aggregate principal amount of the 2018 Notes were converted for $5.2 million in cash and 25,745 shares of our common stock. We also settled bond hedges entered into in connection with the 2018 Notes, resulting in the receipt of 25,745 shares of our common stock. Additionally, we settled the remaining warrants entered into in connection with the 2018 Notes by issuing 238,195 shares of our common stock.

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 $20.0 million.

Note 15 – Equity Incentive Plans

In 2010, we adopted the 2010 Equity Incentive Plan (the "2010 Plan"). The 2010 Plan provides for the granting of stock options, RSUs and stock purchase rights to our employees, directors and consultants. Stock options granted under the 2010 Plan may be either incentive stock options or nonqualified stock options. Incentive stock options may only be granted to our employees. Nonqualified stock options may be granted to our employees, directors and consultants. Generally, our stock options and RSUs vest over four years and are exercisable over a maximum period of 10 years from their grant dates. Vesting typically terminates when the employment or consulting relationship ends. In addition, as a result of our acquisition of SolarCity, we assumed its equity award plans and its outstanding equity awards as of the Acquisition Date. SolarCity's outstanding equity awards were converted into equity awards to acquire our common stock in share amounts and prices based on the Exchange Ratio, with the equity awards retaining the same vesting and other terms and conditions as in effect immediately prior to the acquisition. The vesting and other terms and conditions of the assumed equity awards are substantially the same as those of the 2010 Plan.

As of December 31, 2018, 9,089,194 shares were reserved and available for issuance under the 2010 Plan.

The following table summarizes our stock option and RSU activity:

| | Stock Options | | | | RSUs | |
|---|---|---|---|---|---|---|
| | Number of Options | Weighted-Average Exercise Price | Weighted-Average Remaining Contractual Life (Years) | Aggregate Intrinsic Value (Billions) | Number of RSUs | Weighted-Average Grant Date Fair Value |
| Balance, December 31, 2017 | 10,881,025 | $ 105.56 | | | 4,689,310 | $ 265.43 |
| Granted | 22,535,566 | $ 346.56 | | | 3,043,155 | $ 316.46 |
| Exercised or released | (1,386,509 ) | $ 120.40 | | | (1,724,395) | $ 258.51 |
| Cancelled | (822,228 ) | $ 315.48 | | | (1,349,156) | $ 278.10 |
| Balance, December 31, 2018 | 31,207,854 | $ 273.40 | 7.6 | $ 2.25 | 4,658,914 | $ 294.63 |
| Vested and expected to vest, December 31, 2018 | 15,312,577 | $ 206.44 | 6.4 | $ 2.07 | 4,656,864 | $ 294.62 |
| Exercisable and vested, December 31, 2018 | 7,877,652 | $ 83.45 | 3.9 | $ 1.99 | | |

The weighted-average grant date fair value of RSUs in the years ended December 31, 2018, 2017, and 2016 was $316.46, $308.71 and $202.59, respectively. The aggregate release date fair value of RSUs in the years ended December 31, 2018, 2017 and 2016 was $545.6 million, $491.0 million and $203.9 million, respectively.

The aggregate intrinsic value of options exercised in the years ended December 31, 2018, 2017, and 2016 was $293.2 million, $544.1 million and $1.68 billion, 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, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| Risk-free interest rate: | | | |
| Stock options | 2.5 % | 1.8 % | 1.5 % |
| ESPP | 2.0 % | 1.1 % | 0.6 % |
| Expected term (in years): | | | |
| Stock options | 4.7 | 5.1 | 6.2 |
| ESPP | 0.5 | 0.5 | 0.5 |
| Expected volatility: | | | |
| Stock options | 42 % | 42 % | 47 % |
| ESPP | 43 % | 35 % | 41 % |
| 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 | $121.92 | $122.25 | $98.70 |
| ESPP | $84.37 | $75.05 | $51.31 |

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, 2018, the following operational milestones were considered probable of achievement:

- Total revenue of $20.0 billion;
- Adjusted EBITDA of $1.5 billion; and
- Adjusted EBITDA of $3.0 billion.

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

As of December 31, 2018, we had $598.0 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 3.1 years. As of December 31, 2018, we had unrecognized stock-based compensation expense of $1.51 billion for the operational milestones that were considered not probable of achievement. From March 21, 2018, when the grant was approved by our stockholders, through December 31, 2018, we recorded stock-based compensation expense of $174.9 million related to the 2018 CEO Performance Award.

2014 Performance-Based Stock Option Awards

In 2014, to create incentives for continued long-term success beyond the Model S program and to closely align executive pay with our stockholders' interests in the achievement of significant milestones by us, the Compensation Committee of our Board of Directors granted stock option awards to certain employees (excluding our CEO) to purchase an aggregate of 1,073,000 shares of our common stock. Each award consisted of the following four vesting tranches with the vesting schedule based entirely on the attainment of the future performance milestones, assuming continued employment and service through each vesting date:

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

As of December 31, 2018, 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, 2018, we had unrecognized stock-based compensation expense of $10.9 million for the performance milestone that was considered not probable of achievement. For the year ended December 31, 2018, we did not record any additional stock-based compensation related to these awards. For the years ended December 2017 and 2016, we recorded stock-based compensation expense of $6.8 million and $25.3 million, respectively, 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, 2018, 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, 2018, we had unrecognized stock-based compensation expense of $5.7 million for the performance milestone that was considered not probable of achievement. For the years ended December 31, 2018, 2017 and 2016, we recorded stock-based compensation expense of $0.1 million, $5.1 million and $15.8 million, respectively, related to the 2012 CEO Grant.

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

Summary Stock-Based Compensation Information

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

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| Cost of revenues | $85,742 | $43,845 | $30,400 |
| Research and development | 261,079 | 217,616 | 154,632 |
| Selling, general and administrative | 398,326 | 205,299 | 149,193 |
| Restructuring and other | 3,877 | — | — |
| Total | $749,024 | $466,760 | $334,225 |

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, 2018, 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 3.0 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, 2018, 2017 and 2016, we issued 399,936, 370,173 and 321,788 shares under the ESPP for $108.8 million, $71.0 million and $51.7 million, respectively. There were 2,023,954 shares available for issuance under the ESPP as of December 31, 2018.

Note 16 – Income Taxes

A provision for income taxes of $57.8 million, $31.5 million and $26.7 million has been recognized for the years ended December 31, 2018, 2017 and 2016, 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, 2018, 2017 and 2016 was as follows (in thousands):

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| Domestic | $412,133 | $993,113 | $130,718 |
| Noncontrolling interest and redeemable noncontrolling interest | 86,491 | 279,178 | 98,132 |
| Foreign | 506,121 | 936,741 | 517,498 |
| Loss before income taxes | $1,004,745 | $2,209,032 | $746,348 |

The components of the provision for income taxes for the years ended December 31, 2018, 2017 and 2016 consisted of the following (in thousands):

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| Current: | | | |
| Federal | $(901 ) | $(9,552 ) | $— |
| State | 2,792 | 2,029 | 568 |
| Foreign | 23,622 | 42,715 | 53,962 |
| Total current | 25,513 | 35,192 | 54,530 |
| Deferred: | | | |
| Federal | — | — | — |
| State | — | — | — |
| Foreign | 32,324 | (3,646 ) | (27,832) |
| Total deferred | 32,324 | (3,646 ) | (27,832) |
| Total provision for income taxes | $57,837 | $31,546 | $26,698 |

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.

In December 2017, the Securities and Exchange Commission staff issued Staff Accounting Bulletin No. 118, Income Tax Accounting Implications of the Tax Cuts and Jobs Act (“SAB 118”), which allowed us to record provisional amounts during a measurement period not to extend beyond one year from the enactment date. As such, in accordance with SAB 118, we completed our analysis during the fourth quarter of 2018 considering current legislation and guidance resulting in no material adjustments from the provisional amounts recorded during the prior year.

Deferred tax assets (liabilities) as of December 31, 2018 and 2017 consisted of the following (in thousands):

| | December 31, 2018 | December 31, 2017 |
|---|---|---|
| Deferred tax assets: | | |
| Net operating loss carry-forwards | $ 1,759,716 | $ 1,575,952 |
| Research and development credits | 376,556 | 306,808 |
| Other tax credits | 127,813 | 117,997 |
| Deferred revenue | 155,757 | 200,531 |
| Inventory and warranty reserves | 165,262 | 74,578 |
| Stock-based compensation | 102,256 | 96,916 |
| Investment in certain financing funds | — | 24,471 |
| Accruals and others | 28,295 | 26,416 |
| Total deferred tax assets | 2,715,655 | 2,423,669 |
| Valuation allowance | (1,805,648) | (1,843,713) |
| Deferred tax assets, net of valuation allowance | 910,007 | 579,956 |
| Deferred tax liabilities: | | |
| Depreciation and amortization | (860,611) | (537,613) |
| Other | (23,850) | (18,734) |
| Investment in certain financing funds | (33,493) | — |
| Total deferred tax liabilities | (917,954) | (556,347) |
| Deferred tax liabilities, net of valuation allowance and deferred tax assets | $ (7,947) | $ 23,609 |

As of December 31, 2018, we recorded a valuation allowance of $1.81 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 decreased by $38.1 million, increased by $821.0 million, and increased by $354.3 million during the years ended December 31, 2018, 2017 and 2016, respectively. The changes in valuation allowance are primarily due to additional U.S. deferred tax assets and liabilities incurred in the respective year. The 2017 additional U.S. deferred tax assets are net of re-measurement from 35% to 21% as a result of the Tax Act. There have been no material releases of the valuation allowance. Management believes that based on the available information, it is more likely than not that the U.S. deferred tax assets will not be realized, such that a full valuation allowance is required against all U.S. deferred tax assets. We have net $30.2 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.

The reconciliation of taxes at the federal statutory rate to our provision for income taxes for the years ended December 31, 2018, 2017 and 2016 was as follows (in thousands):

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| Tax at statutory federal rate | $(210,996) | $(773,162) | $(261,222) |
| State tax, net of federal benefit | 2,792 | 2,029 | 568 |
| Nondeductible expenses | 65,375 | 30,138 | 26,547 |
| Excess tax benefits related to stock based compensation (1) | (43,977) | (1,013,196) | — |
| Foreign income rate differential | 160,370 | 364,699 | 206,470 |
| U.S. tax credits | (79,565) | (109,501) | (162,865) |
| Noncontrolling interests and redeemable noncontrolling interests adjustment | 31,858 | 65,920 | 21,964 |
| Effect of U.S. tax law change (2) | — | 722,646 | — |
| Bargain in purchase gain | — | 20,211 | (31,055) |
| Other reconciling items | 960 | 3,178 | 785 |
| Change in valuation allowance | 131,020 | 718,584 | 225,506 |
| Provision for income taxes | $57,837 | $31,546 | $26,698 |

(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.

(2) Due to the Tax Act, our U.S. deferred tax assets and liabilities as of December 31, 2017 were re-measured from 35% to 21%. The change in tax rate resulted in a decrease to our gross U.S. deferred tax assets which is offset by a corresponding decrease to our valuation allowance.

As of December 31, 2018, we had $7.30 billion of federal and $5.37 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, 2018, we had research and development tax credits of $256.1 million and $276.2 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 $126.8 million for federal income tax purposes, which will not begin to significantly expire until 2033.

Collectively, we had no foreign earnings as of December 31, 2018 and therefore was not subject to the mandatory repatriation tax provisions of the Tax Act. However, some of our foreign subsidiaries do have accumulated earnings. 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 thousands):

| | |
|---|---|
| December 31, 2015 | $99,127 |
| Increases in balances related to prior year tax positions | 28,677 |
| Increases in balances related to current year tax positions | 62,805 |
| Assumed uncertain tax positions through acquisition | 13,327 |
| December 31, 2016 | 203,936 |
| Decrease in balances related to prior year tax positions | (31,493 ) |
| Increases in balances related to current year tax positions | 84,352 |
| Change in balances related to effect of U.S. tax law change | (58,050 ) |
| December 31, 2017 | 198,745 |
| Decrease in balances related to prior year tax positions | (6,347 ) |
| Increases in balances related to current year tax positions | 60,960 |
| December 31, 2018 | $253,357 |

As of December 31, 2018, accrued interest and penalties related to unrecognized tax benefits are classified as income tax expense and were immaterial. Unrecognized tax benefits of $243.8 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 2017 remain subject to examination for federal income tax purposes, and tax years 2004 to 2017 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 2017 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. As this decision can be overturned upon appeal, we have not recorded any impact as of December 31, 2018. In addition, any potential tax benefits would increase our U.S. deferred tax asset, which is currently offset with a full valuation allowance.

Note 17 – Commitments and Contingencies

Non-Cancellable Leases

We have entered into various non-cancellable operating lease agreements for certain of our offices, manufacturing and warehouse facilities, retail and service locations, equipment, vehicles, solar energy systems and Supercharger sites, throughout the world. Included within the lease commitment table below are payments due under operating leases that have been accounted for as build-to-suit lease arrangements, which are included in property, plant and equipment on the consolidated balance sheets. Rent expense for the years ended December 31, 2018, 2017, and 2016 was $182.6 million, $177.7 million and $116.8 million, respectively.

We have entered into various agreements to lease equipment under capital leases up to 60 months. The equipment under the leases are collateral for the lease obligations and are included within property, plant and equipment on the consolidated balance sheets.

Future minimum commitments for leases as of December 31, 2018 were as follows (in thousands):

| | Operating Leases | Capital Leases |
|---|---|---|
| 2019 | $275,654 | $416,952 |
| 2020 | 256,931 | 503,545 |
| 2021 | 230,406 | 506,197 |
| 2022 | 182,911 | 23,828 |
| 2023 | 157,662 | 4,776 |
| Thereafter | 524,590 | 5,938 |
| Total minimum lease payments | $1,628,154 | 1,461,236 |
| Less: Amounts representing interest not yet incurred | | 122,340 |
| Present value of capital lease obligations | | 1,338,896 |
| Less: Current portion | | 345,714 |
| Long-term portion of capital lease obligations | | $993,182 |

Build-to-Suit Lease Arrangement in Buffalo, New York

We have a build-to-suit lease arrangement with the Research Foundation for the State University of New York (the "SUNY Foundation") where the SUNY Foundation will construct a solar cell and panel manufacturing facility, referred to as Gigafactory 2, with our participation in the design and construction, install certain utilities and other improvements and acquire certain manufacturing equipment designated by us to be used in the manufacturing facility. The SUNY Foundation covers (i) construction costs related to the manufacturing facility up to $350.0 million, (ii) the acquisition and commissioning of the manufacturing equipment in an amount up to $274.7 million and (iii) $125.3 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 are responsible for any construction or equipment costs in excess of such amounts. The SUNY Foundation will own the manufacturing facility and the manufacturing equipment purchased by the SUNY Foundation. Following completion of the manufacturing facility, we will lease 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. During the three months ended March 31, 2018, we began production at the manufacturing facility, although construction has not been fully completed as of December 31, 2018.

Under the terms of the build-to-suit 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 $41.2 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.

The non-cash investing and financing activities related to the arrangement during the years ended December 31, 2018 and 2017 amounted to $8.0 million and $86.1 million. The non-cash investing and financing activities related to the arrangement from the Acquisition Date through December 31, 2016 amounted to $5.6 million.

Environmental Liabilities

In connection with our factory located in Fremont, California, we are obligated to pay for the remediation of certain environmental conditions existing at the time we purchased the property from New United Motor Manufacturing, Inc. (“NUMMI”). In particular, we are responsible for the first $15.0 million of remediation costs, any remediation costs in excess of $30.0 million and any remediation costs incurred after 10 years from the purchase date. NUMMI is responsible for any remediation costs between $15.0 million and $30.0 million for up to 10 years after the purchase date.

Legal Proceedings

Securities Litigation Relating to SolarCity's Financial Statements and Guidance

On March 28, 2014, a purported stockholder class action was filed in the U.S. District Court for the Northern District of California against SolarCity and two of its officers. 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 SolarCity's securities from March 6, 2013 to March 18, 2014. After a series of amendments to the original complaint, the District Court dismissed the amended complaint and entered a judgment in our favor on August 9, 2016. The plaintiffs filed a notice of appeal, and on December 4, 2017, the Court heard oral argument on the appeal. On March 8, 2018, the Court upheld the District Court ruling of dismissal and judgment in our favor. The case is concluded.

Securities Litigation Relating to the SolarCity Acquisition

Between September 1, 2016 and October 5, 2016, seven lawsuits were filed in the Court of Chancery of the State of Delaware 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, electing not to hear an appeal at this early stage of the case. Defendants filed their answer on May 18, 2018. The parties are proceeding with discovery. The case is set for trial in March 2020.

These plaintiffs and others filed parallel actions in the U.S. District Court for the District of Delaware on April 21, 2017. Those actions have been consolidated and are stayed pending the Chancery Court litigation. They include claims for violations of the federal securities laws and breach of fiduciary duties by Tesla's board of directors. That action is stayed pending the 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 defendant's motion to dismiss with leave to amend. Plaintiffs filed their amended complaint on September 28, 2018. We will file a motion to dismiss the amended complaint on February 15, 2019. The hearing on the motion to dismiss is set for March 1, 2019. 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.

On October 26, 2018, in a similar action, a purported stockholder class action was filed in the Superior Court of California in Santa Clara County against Tesla, Elon Musk and seven initial purchasers in an offering of debt securities by Tesla in August 2017. The complaint alleges misrepresentations made by Tesla regarding the number of Model 3 vehicles Tesla expected to produce by the end of 2017 in connection with such offering, and seeks unspecified compensatory damages and other relief on behalf of a purported class of purchasers of Tesla securities in such offering. Tesla thereafter removed the case to federal court. On January 22, 2019, plaintiff abandoned its effort to proceed in state court, instead filing an amended complaint against Tesla, Elon Musk and seven initial purchasers in the debt offering before the same judge in the U.S. District Court for the Northern District of California who is hearing the above-referenced earlier filed federal court case. On February 5, 2019, the Court stayed this new case pending a ruling on the motion to dismiss the complaint in the above earlier filed case. We believe that the claims are without merit and intend to defend against this lawsuit vigorously. We are unable to estimate the possible loss or range of loss, if any, associated with this lawsuit.

Litigation Relating to 2018 CEO Performance Award

On June 4, 2018, a purported Tesla stockholder filed a putative class and derivative action in the Delaware Court of Chancery against Mr. Musk and the members of Tesla's board of directors as then constituted, alleging that such board members breached their fiduciary duties by approving the stock-based compensation plan. The complaint seeks, among other things, monetary damages and rescission or reformation of the stock-based compensation plan. On August 31, 2018, defendants filed a motion to dismiss the complaint; plaintiff filed its opposition brief on November 1, 2018 and defendants filed a reply brief on December 13, 2018. The hearing on the motion to dismiss is set for May 9, 2019. We believe the claims asserted in this lawsuit are without merit and intend to defend against them vigorously.

Securities Litigation related 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 United States 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. Defendants plan to file a motion to dismiss the complaint on or before March 7, 2019. The hearing on the motion to dismiss is tentatively set for June 20, 2019. 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. These cases have been stayed pending resolution of the stockholder class action. In addition to these cases, on October 25, 2018, another derivative lawsuit was filed in federal court in Delaware against Mr. Musk and the members of the Tesla board of directors as then constituted, and the parties have agreed to also stay this case pending resolution of the stockholder class action; the parties' proposed stipulation regarding the stay is pending with the Court. We believe that the claims have no merit and intend to defend against them vigorously. The Company is unable to estimate the potential loss, or range of loss, associated with these claims.

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.

Certain Investigations and Other Matters

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

In particular, the SEC has issued subpoenas to Tesla in connection with (a) Mr. Musk's prior statement that he was considering taking Tesla private and (b) certain projections that we made for Model 3 production rates during 2017 and other public statements relating to Model 3 production. The DOJ has also asked us to voluntarily provide it with information about each of these matters and is investigating. Aside from the settlement with the SEC relating to Mr. Musk's statement that he was considering taking Tesla private, there have not been any developments in these matters that we deem to be material, and to our knowledge no government agency in any ongoing investigation has concluded that any wrongdoing occurred. As is our normal practice, we have been cooperating and will continue to cooperate with government authorities. We cannot predict the outcome or impact of any ongoing matters. Should the government decide to pursue an enforcement action, there exists the possibility of a material adverse impact on our business, results of operation, prospects, cash flows, and financial position.

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

Indemnification and Guaranteed Returns

We are contractually obligated to compensate certain fund investors for any losses that they may suffer in certain limited circumstances resulting from reductions in U.S. Treasury grants or ITCs. Generally, such obligations would arise as a result of reductions to the value of the underlying solar energy systems as assessed by the U.S. Treasury Department for purposes of claiming U.S. Treasury grants or as assessed by the IRS for purposes of claiming ITCs or U.S. Treasury grants. For each balance sheet date, we assess and recognize, when applicable, a distribution payable for the potential exposure from this obligation based on all the information available at that time, including any guidelines issued by the U.S. Treasury Department on solar energy system valuations for purposes of claiming U.S. Treasury grants and any audits undertaken by the IRS. We believe that any payments to the fund investors in excess of the amounts already recognized by us, which were immaterial, for this obligation are not probable 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, 2018, we had $219.6 million of unused letters of credit outstanding.

Note 18 – Variable Interest Entity Arrangements

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

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

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

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

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

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

| | December 31, 2018 | December 31, 2017 |
|---|---|---|
| Assets | | |
| Current assets | | |
| Cash and cash equivalents | $ 75,203 | $ 55,425 |
| Restricted cash | 130,927 | 33,656 |
| Accounts receivable, net | 18,702 | 18,204 |
| Prepaid expenses and other current assets | 10,262 | 9,018 |
| Total current assets | 235,094 | 116,303 |
| Operating lease vehicles, net | 155,439 | 337,089 |
| Solar energy systems, leased and to be leased, net | 5,116,728 | 5,075,321 |
| Restricted cash, net of current portion | 65,262 | 36,999 |
| Other assets | 55,554 | 29,555 |
| Total assets | $ 5,628,077 | $ 5,595,267 |
| Liabilities | | |
| Current liabilities | | |
| Accounts payable | $ 32 | $ 32 |
| Accrued liabilities and other | 132,774 | 51,652 |
| Deferred revenue | 21,345 | 59,412 |
| Customer deposits | — | 726 |
| Current portion of long-term debt and capital leases | 662,988 | 196,531 |
| Total current liabilities | 817,139 | 308,353 |
| Deferred revenue, net of current portion | 177,451 | 323,919 |
| Long-term debt and capital leases, net of current portion | 1,237,707 | 625,934 |
| Other long-term liabilities | 26,400 | 30,536 |
| Total liabilities | $ 2,258,697 | $ 1,288,742 |

Note 19 – Lease Pass-Through Financing Obligation

Through December 31, 2018, 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, leased and to be leased, net on the consolidated balance sheet.

The cost of the solar energy systems under lease pass-through fund arrangements as of December 31, 2018 and 2017 was $1.05 billion and $1.09 billion, respectively. The accumulated depreciation on these assets as of December 31, 2018 and 2017 was $66.1 million and $30.9 million, respectively. The total lease pass-through financing obligation as of December 31, 2018 was $111.9 million, of which $61.8 million was classified as a current liability. The total lease pass-through financing obligation as of December 31, 2017 was $134.8 million, of which $67.3 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 sheet.

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, 2018. 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, 2018, the future minimum master lease payments to be received from investors, for each of the next five years and thereafter, were as follows (in thousands):

| | |
|---|---|
| 2019 | $42,775 |
| 2020 | 42,100 |
| 2021 | 41,147 |
| 2022 | 33,055 |
| 2023 | 26,152 |
| Thereafter | 468,490 |
| Total | $653,719 |

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 20 – Defined Contribution Plan

We have a 401(k) savings plan that qualifies 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, 2018, 2017 and 2016.

Note 21 – Related Party Transactions

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

| | December 31, 2018 | December 31, 2017 |
|---|---|---|
| Solar Bonds issued to related parties | $ 100 | $ 100 |
| Convertible senior notes due to related parties | $ 2,674 | $ 2,519 |
| Promissory notes due to related parties | $ — | $ 100,000 |

The related party transactions were primarily from debt held by our CEO, SolarCity's former CEO and SolarCity's former Chief Technology Officer. During the year ended December 31, 2018, the promissory notes payable to such parties were fully repaid. Refer to Note 13, Long-Term Debt Obligations.

Our convertible senior notes are not re-measured at fair value (refer to Note 5, Fair Value of Financial Instruments). As of December 31, 2018 and 2017, the unpaid principal balance of convertible senior notes due to related parties is $3.0 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 $20.0 million.

Note 22 – Segment Reporting and Information about Geographic Areas

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

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| Automotive segment | | | |
| Revenues | $19,906,024 | $10,642,485 | $6,818,738 |
| Gross profit | $3,851,673 | $1,980,759 | $1,596,195 |
| Energy generation and storage segment | | | |
| Revenues | $1,555,244 | $1,116,266 | $181,394 |
| Gross profit | $190,348 | $241,728 | $3,062 |

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

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| United States | $14,871,507 | $6,221,439 | $4,200,706 |
| China | 1,757,147 | 2,027,062 | 1,065,255 |
| Netherlands | 965,596 | 330,343 | 305,184 |
| Norway | 812,730 | 823,081 | 335,572 |
| Other | 3,054,288 | 2,356,826 | 1,093,415 |
| Total | $21,461,268 | $11,758,751 | $7,000,132 |

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

| | December 31, 2018 | December 31, 2017 |
|---|---|---|
| United States | $ 16,741,409 | $ 15,587,979 |
| International | 860,064 | 787,033 |
| Total | $ 17,601,473 | $ 16,375,012 |

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Note 23 – Restructuring and Other

During 2018, we carried-out certain restructuring actions in order to reduce costs and improve efficiency and recognized $36.6 million of employee termination expenses and estimated losses from sub-leasing a certain facility. The employee termination cash expenses of $27.3 million were substantially paid by the end of 2018, while the remaining amounts were non-cash. Also included within restructuring and other activities was $55.2 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 $13.3 million (see Note 4, Intangible Assets).

In October 2018, a final court order was entered approving the terms of a settlement in connection with the SEC's legal actions relating to Elon Musk's prior consideration during the third quarter of 2018 of a take-private proposal for Tesla. Consequently, we recognized settlement and legal expenses of $30.1 million in the year ended December 31, 2018 (see Note 17, Commitments and Contingencies). These expenses were substantially paid by the end of 2018.

Note 24 – Subsequent Events

On February 3, 2019, we entered into a definitive agreement to acquire Maxwell Technologies, Inc. ("Maxwell"). Pursuant to the definitive agreement, each issued and outstanding share of Maxwell common stock will be exchanged for a fraction of a share of our common stock equal to the lesser of: (i) $4.75 divided by an average value of one share of our common stock as calculated pursuant to the definitive agreement, and (ii) 0.0193, provided that cash will be paid in lieu of any fractional shares of our common stock. The closing of the transaction is subject to the successful tender of a specified minimum number of Maxwell common stock in an exchange offer to be commenced by our wholly-owned subsidiary, certain regulatory approvals and customary closing conditions.

Note 25 – Quarterly Results of Operations (Unaudited)

The following table presents selected quarterly results of operations data for the years ended December 31, 2018 and 2017 (in thousands, except per share amounts):

| | Three Months Ended | | | |
|---|---|---|---|---|
| | March 31 | June 30 | September 30 | December 31 |
| 2018 | | | | |
| Total revenues | $3,408,751 | $4,002,231 | $ 6,824,413 | $ 7,225,873 |
| Gross profit | $456,526 | $618,930 | $ 1,523,665 | $ 1,442,900 |
| Net (loss) income attributable to common stockholders | $(709,551 ) | $(717,539 ) | $ 311,516 | $ 139,483 |

| | | | | |
|---|---|---|---|---|
| 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 |
| 2017 | | | | |
| Total revenues | $2,696,270 | $2,789,557 | $2,984,675 | $3,288,249 |
| Gross profit | $667,946 | $666,615 | $449,140 | $438,786 |
| Net loss attributable to common stockholders | $(330,277) | $(336,397) | $(619,376) | $(675,350) |
| Net loss per share of common stock attributable to common stockholders, basic | $(2.04) | $(2.04) | $(3.70) | $(4.01) |
| Net loss per share of common stock attributable to common stockholders, diluted | $(2.04) | $(2.04) | $(3.70) | $(4.01) |

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## ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None

## ITEM 9A. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

We conducted an evaluation as of December 31, 2018, under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, of the effectiveness of the design and operation of our disclosure controls and procedures. Based upon that evaluation, our Chief Executive Officer and Chief Financial Officer concluded that, as of December 31, 2018, our disclosure controls and procedures were effective to provide reasonable assurance.

During the fourth quarter of 2018, we further enhanced our disclosure controls in accordance with the September 29, 2018 settlement with the SEC regarding Elon Musk’s social media posts on August 7, 2018.

Management’s Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting. Internal control over financial reporting is a process designed by, or under the supervision of, our Chief Executive Officer and Chief Financial Officer to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles and includes those policies and procedures that (1) pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of our assets; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that our receipts and expenditures are being made only in accordance with authorizations of our management and directors and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our assets that could have a material effect on the financial statements.

Under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting based on criteria established in Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (“COSO”). Our management concluded that our internal control over financial reporting was effective as of December 31, 2018.

Our independent registered public accounting firm, PricewaterhouseCoopers LLP, has audited the effectiveness of our internal control over financial reporting as of December 31, 2018, as stated in their report which is included herein.

Limitations on the Effectiveness of Controls

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

Changes in Internal Control over Financial Reporting

There was no change in our internal control over financial reporting that occurred during the fourth fiscal quarter of the year ended December 31, 2018, which has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

ITEM 9B. OTHER INFORMATION

None

# PART III

## ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information required by this Item 10 of Form 10-K will be included in our 2019 Proxy Statement to be filed with the Securities and Exchange Commission in connection with the solicitation of proxies for our 2019 Annual Meeting of Stockholders and is incorporated herein by reference. The 2019 Proxy Statement will be filed with the Securities and Exchange Commission within 120 days after the end of the fiscal year to which this report relates.

## ITEM 11. EXECUTIVE COMPENSATION

The information required by this Item 11 of Form 10-K will be included in our 2019 Proxy Statement and is incorporated herein by reference.

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

The information required by this Item 12 of Form 10-K will be included in our 2019 Proxy Statement and is incorporated herein by reference.

## ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS AND DIRECTOR INDEPENDENCE

The information required by this Item 13 of Form 10-K will be included in our 2019 Proxy Statement and is incorporated herein by reference.

## ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information required by this Item 14 of Form 10-K will be included in our 2019 Proxy Statement and is incorporated herein by reference.

## ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

1. Financial statements (see Index to Consolidated Financial Statements in Part II, Item 8 of this report)
2. All financial statement schedules have been omitted since the required information was not applicable or was not present in amounts sufficient to require submission of the schedules, or because the information required is included in the consolidated financial statements or the accompanying notes
3. The exhibits listed in the following Index to Exhibits are filed or incorporated by reference as part of this report

INDEX TO EXHIBITS

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

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| Exhibit Number | Exhibit Description | Incorporated by Reference Form | File No. | Exhibit | Filing Date | Filed Herewith |
|---|---|---|---|---|---|---|
| 4.8 | Amendment to Fifth Amended and Restated Investor's Rights Agreement, dated as of May 30, 2011, between Registrant and certain holders of the Registrant's capital stock named therein. | 8-K | 001-34756 | 4.1 | June 1, 2011 | |
| 4.9 | Sixth Amendment to Fifth Amended and Restated Investors' Rights Agreement, dated as of May 15, 2013 among the Registrant, the Elon Musk Revocable Trust dated July 22, 2003 and certain other holders of the capital stock of the Registrant named therein. | 8-K | 001-34756 | 4.1 | May 20, 2013 | |
| 4.10 | Waiver to Fifth Amended and Restated Investor's Rights Agreement, dated as of May 14, 2013, between the Registrant and certain holders of the capital stock of the Registrant named therein. | 8-K | 001-34756 | 4.2 | May 20, 2013 | |
| 4.11 | Waiver to Fifth Amended and Restated Investor's Rights Agreement, dated as of August 13, 2015, between the Registrant and certain holders of the capital stock of the Registrant named therein. | 8-K | 001-34756 | 4.1 | August 19, 2015 | |
| 4.12 | Waiver to Fifth Amended and Restated Investors' Rights Agreement, dated as of May 18, 2016, between the Registrant and certain holders of the capital stock of the Registrant named therein. | 8-K | 001-34756 | 4.1 | May 24, 2016 | |
| 4.13 | Waiver to Fifth Amended and Restated Investors' Rights Agreement, dated as of March 15, 2017, between the Registrant and certain holders of the capital stock of the Registrant named therein. | 8-K | 001-34756 | 4.1 | March 17, 2017 | |
| 4.14 | Indenture, dated as of May 22, 2013, by and between the Registrant and U.S. Bank National Association. | 8-K | 001-34756 | 4.1 | May 22, 2013 | |
| 4.15 | Second Supplemental Indenture, dated as of March 5, 2014, by and between the Registrant and U.S. Bank National Association. | 8-K | 001-34756 | 4.2 | March 5, 2014 | |
| 4.16 | Form of 0.25% Convertible Senior Note Due March 1, 2019 (included in Exhibit 4.17). | 8-K | 001-34756 | 4.2 | March 5, 2014 | |

| Exhibit Number | Exhibit Description | Incorporated by Reference Form | File No. | Exhibit | Filing Date | Filed Herewith |
|---|---|---|---|---|---|---|
| 4.17 | Third Supplemental Indenture, dated as of March 5, 2014, by and between the Registrant and U.S. Bank National Association. | 8-K | 001-34756 | 4.4 | March 5, 2014 | |
| 4.18 | Form of 1.25% Convertible Senior Note Due March 1, 2021 (included in Exhibit 4.19). | 8-K | 001-34756 | 4.4 | March 5, 2014 | |
| 4.19 | Fourth Supplemental Indenture, dated as of March 22, 2017, by and between the Registrant and U.S. Bank National Association. | 8-K | 001-34756 | 4.2 | March 22, 2017 | |
| 4.20 | Form of 2.375% Convertible Senior Note Due March 15, 2022 (included in Exhibit 4.21). | 8-K | 001-34756 | 4.2 | March 22, 2017 | |
| 4.21 | Indenture, dated as of August 18, 2017, by and among the Registrant, SolarCity, and U.S. Bank National Association, as trustee. | 8-K | 001-34756 | 4.1 | August 23, 2017 | |
| 4.22 | Form of 5.30% Senior Note due August 15, 2025. | 8-K | 001-34756 | 4.2 | August 23, 2017 | |
| 4.23 | Indenture, dated as of September 30, 2014, between SolarCity and Wells Fargo Bank, National Association | 8-K(1) | 001-35758 | 4.1 | October 6, 2014 | |
| 4.24 | First Supplemental Indenture, dated as of November 21, 2016, between SolarCity and Wells Fargo Bank, National Association, as trustee to the Indenture, dated as of September 30, 2014, between SolarCity and Wells Fargo Bank, National Association, as trustee. | 8-K | 001-34756 | 4.2 | November 21, 2016 | |
| 4.25 | Indenture, dated as of December 7, 2015, between SolarCity and Wells Fargo Bank, National Association | 8-K(1) | 001-35758 | 4.1 | December 7, 2015 | |
| 4.26 | First Supplemental Indenture, dated as of November 21, 2016, between SolarCity and Wells Fargo Bank, National Association, as trustee to the Indenture, dated as of December 7, 2015, between SolarCity and Wells Fargo Bank, National Association, as trustee. | 8-K | 001-34756 | 4.3 | November 21, 2016 | |
| 4.27 | Indenture, dated as of October 15, 2014, between SolarCity and U.S. Bank National Association, as trustee. | S-3ASR(1) | 333-199321 | 4.1 | October 15, 2014 | |

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| Exhibit Number | Exhibit Description | Incorporated by Reference Form | File No. | Exhibit | Filing Date | Filed Herewith |
|---|---|---|---|---|---|---|
| 4.28 | Third Supplemental Indenture, dated as of October 15, 2014, by and between SolarCity and the Trustee, related to SolarCity's 3.00% Solar Bonds, Series 2014/3-3. | 8-K(1) | 001-35758 | 4.4 | October 15, 2014 | |
| 4.29 | Fourth Supplemental Indenture, dated as of October 15, 2014, by and between SolarCity and the Trustee, related to SolarCity's 4.00% Solar Bonds, Series 2014/4-7 | 8-K(1) | 001-35758 | 4.5 | October 15, 2014 | |
| 4.30 | Seventh Supplemental Indenture, dated as of January 29, 2015, by and between SolarCity and the Trustee, related to SolarCity's 3.00% Solar Bonds, Series 2015/3-3. | 8-K(1) | 001-35758 | 4.4 | January 29, 2015 | |
| 4.31 | Eighth Supplemental Indenture, dated as of January 29, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.00% Solar Bonds, Series 2015/4-7. | 8-K(1) | 001-35758 | 4.5 | January 29, 2015 | |
| 4.32 | Ninth Supplemental Indenture, dated as of March 9, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.00% Solar Bonds, Series 2015/5-5. | 8-K(1) | 001-35758 | 4.2 | March 9, 2015 | |
| 4.33 | Tenth Supplemental Indenture, dated as of March 9, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.00% Solar Bonds, Series 2015/6-10. | 8-K(1) | 001-35758 | 4.3 | March 9, 2015 | |
| 4.34 | Eleventh Supplemental Indenture, dated as of March 9, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.75% Solar Bonds, Series 2015/7-15. | 8-K(1) | 001-35758 | 4.4 | March 9, 2015 | |
| 4.35 | Thirteenth Supplemental Indenture, dated as of March 19, 2015, by and between SolarCity and the Trustee, related to SolarCity's 2.60% Solar Bonds, Series 2015/C2-3. | 8-K(1) | 001-35758 | 4.3 | March 19, 2015 | |
| 4.36 | Fourteenth Supplemental Indenture, dated as of March 19, 2015, by and between SolarCity and the Trustee, related to SolarCity's 3.60% Solar Bonds, Series 2015/C3-5. | 8-K(1) | 001-35758 | 4.4 | March 19, 2015 | |

| Exhibit Number | Exhibit Description | Incorporated by Reference Form | File No. | Exhibit | Filing Date | Filed Herewith |
|---|---|---|---|---|---|---|
| 4.37 | Fifteenth Supplemental Indenture, dated as of March 19, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C4-10. | 8-K(1) | 001-35758 | 4.5 | March 19, 2015 | |
| 4.38 | Sixteenth Supplemental Indenture, dated as of March 19, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C5-15. | 8-K(1) | 001-35758 | 4.6 | March 19, 2015 | |
| 4.39 | Eighteenth Supplemental Indenture, dated as of March 26, 2015, by and between SolarCity and the Trustee, related to SolarCity's 2.65% Solar Bonds, Series 2015/C7-3. | 8-K(1) | 001-35758 | 4.3 | March 26, 2015 | |
| 4.40 | Nineteenth Supplemental Indenture, dated as of March 26, 2015, by and between SolarCity and the Trustee, related to SolarCity's 3.60% Solar Bonds, Series 2015/C8-5. | 8-K(1) | 001-35758 | 4.4 | March 26, 2015 | |
| 4.41 | Twentieth Supplemental Indenture, dated as of March 26, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C9-10. | 8-K(1) | 001-35758 | 4.5 | March 26, 2015 | |
| 4.42 | Twenty-First Supplemental Indenture, dated as of March 26, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C10-15. | 8-K(1) | 001-35758 | 4.6 | March 26, 2015 | |
| 4.43 | Twenty-Fourth Supplemental Indenture, dated as of April 2, 2015, by and between SolarCity and the Trustee, related to SolarCity's 2.65% Solar Bonds, Series 2015/C12-3. | 8-K(1) | 001-35758 | 4.3 | April 2, 2015 | |
| 4.44 | Twenty-Fifth Supplemental Indenture, dated as of April 2, 2015, by and between SolarCity and the Trustee, related to SolarCity's 3.60% Solar Bonds, Series 2015/C13-5. | 8-K(1) | 001-35758 | 4.4 | April 2, 2015 | |
| 4.45 | Twenty-Sixth Supplemental Indenture, dated as of April 2, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C14-10. | 8-K(1) | 001-35758 | 4.5 | April 2, 2015 | |

| Exhibit Number | Exhibit Description | Incorporated by Reference Form | File No. | Exhibit | Filing Date | Filed Herewith |
|---|---|---|---|---|---|---|
| 4.46 | Twenty-Eighth Supplemental Indenture, dated as of April 9, 2015, by and between SolarCity and the Trustee, related to SolarCity's 2.65% Solar Bonds, Series 2015/C17-3. | 8-K(1) | 001-35758 | 4.3 | April 9, 2015 | |
| 4.47 | Twenty-Ninth Supplemental Indenture, dated as of April 9, 2015, by and between SolarCity and the Trustee, related to SolarCity's 3.60% Solar Bonds, Series 2015/C18-5. | 8-K(1) | 001-35758 | 4.4 | April 9, 2015 | |
| 4.48 | Thirtieth Supplemental Indenture, dated as of April 9, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C19-10. | 8-K(1) | 001-35758 | 4.5 | April 9, 2015 | |
| 4.49 | Thirty-First Supplemental Indenture, dated as of April 9, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C20-15. | 8-K(1) | 001-35758 | 4.6 | April 9, 2015 | |
| 4.50 | Thirty-Third Supplemental Indenture, dated as of April 14, 2015, by and between SolarCity and the Trustee, related to SolarCity's 2.65% Solar Bonds, Series 2015/C22-3. | 8-K(1) | 001-35758 | 4.3 | April 14, 2015 | |
| 4.51 | Thirty-Fourth Supplemental Indenture, dated as of April 14, 2015, by and between SolarCity and the Trustee, related to SolarCity's 3.60% Solar Bonds, Series 2015/C23-5. | 8-K(1) | 001-35758 | 4.4 | April 14, 2015 | |
| 4.52 | Thirty-Fifth Supplemental Indenture, dated as of April 14, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C24-10. | 8-K(1) | 001-35758 | 4.5 | April 14, 2015 | |
| 4.53 | Thirty-Sixth Supplemental Indenture, dated as of April 14, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C25-15. | 8-K(1) | 001-35758 | 4.6 | April 14, 2015 | |
| 4.54 | Thirty-Eighth Supplemental Indenture, dated as of April 21, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C27-10. | 8-K(1) | 001-35758 | 4.3 | April 21, 2015 | |

| Exhibit Number | Exhibit Description | Incorporated by Reference Form | File No. | Exhibit | Filing Date | Filed Herewith |
|---|---|---|---|---|---|---|
| 4.55 | Thirty-Ninth Supplemental Indenture, dated as of April 21, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C28-15. | 8-K(1) | 001-35758 | 4.4 | April 21, 2015 | |
| 4.56 | Forty-First Supplemental Indenture, dated as of April 27, 2015, by and between SolarCity and the Trustee, related to SolarCity's 2.65% Solar Bonds, Series 2015/C30-3. | 8-K(1) | 001-35758 | 4.3 | April 27, 2015 | |
| 4.57 | Forty-Second Supplemental Indenture, dated as of April 27, 2015, by and between SolarCity and the Trustee, related to SolarCity's 3.60% Solar Bonds, Series 2015/C31-5. | 8-K(1) | 001-35758 | 4.4 | April 27, 2015 | |
| 4.58 | Forty-Third Supplemental Indenture, dated as of April 27, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C32-10. | 8-K(1) | 001-35758 | 4.5 | April 27, 2015 | |
| 4.59 | Forty-Fourth Supplemental Indenture, dated as of April 27, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C33-15. | 8-K(1) | 001-35758 | 4.6 | April 27, 2015 | |
| 4.60 | Forty-Sixth Supplemental Indenture, dated as of May 1, 2015, by and between SolarCity and the Trustee, related to SolarCity's 3.00% Solar Bonds, Series 2015/10-3. | 8-K(1) | 001-35758 | 4.3 | May 1, 2015 | |
| 4.61 | Forty-Seventh Supplemental Indenture, dated as of May 1, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.00% Solar Bonds, Series 2015/11-5. | 8-K(1) | 001-35758 | 4.4 | May 1, 2015 | |
| 4.62 | Forty-Eighth Supplemental Indenture, dated as of May 1, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.00% Solar Bonds, Series 2015/12-10. | 8-K(1) | 001-35758 | 4.5 | May 1, 2015 | |
| 4.63 | Forty-Ninth Supplemental Indenture, dated as of May 1, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.75% Solar Bonds, Series 2015/13-15. | 8-K(1) | 001-35758 | 4.6 | May 1, 2015 | |

| Exhibit Number | Exhibit Description | Incorporated by Reference Form | File No. | Exhibit | Filing Date | Filed Herewith |
|---|---|---|---|---|---|---|
| 4.64 | Fiftieth Supplemental Indenture, dated as of May 11, 2015, by and between SolarCity and the Trustee, related to SolarCity's 2.65% Solar Bonds, Series 2015/C34-3. | 8-K(1) | 001-35758 | 4.2 | May 11, 2015 | |
| 4.65 | Fifty-First Supplemental Indenture, dated as of May 11, 2015, by and between SolarCity and the Trustee, related to SolarCity's 3.60% Solar Bonds, Series 2015/C35-5. | 8-K(1) | 001-35758 | 4.3 | May 11, 2015 | |
| 4.66 | Fifty-Second Supplemental Indenture, dated as of May 11, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C36-10. | 8-K(1) | 001-35758 | 4.4 | May 11, 2015 | |
| 4.67 | Fifty-Third Supplemental Indenture, dated as of May 11, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C37-15. | 8-K(1) | 001-35758 | 4.5 | May 11, 2015 | |
| 4.68 | Fifty-Fourth Supplemental Indenture, dated as of May 14, 2015, by and between SolarCity and the Trustee, related to SolarCity's 2.50% Solar Bonds, Series 2015/14-2. | 8-K(1) | 001-35758 | 4.2 | May 14, 2015 | |
| 4.69 | Fifty-Fifth Supplemental Indenture, dated as of May 18, 2015, by and between SolarCity and the Trustee, related to SolarCity's 2.65% Solar Bonds, Series 2015/C38-3. | 8-K(1) | 001-35758 | 4.2 | May 18, 2015 | |
| 4.70 | Fifty-Sixth Supplemental Indenture, dated as of May 18, 2015, by and between SolarCity and the Trustee, related to SolarCity's 3.60% Solar Bonds, Series 2015/C39-5. | 8-K(1) | 001-35758 | 4.3 | May 18, 2015 | |
| 4.71 | Fifty-Seventh Supplemental Indenture, dated as of May 18, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C40-10. | 8-K(1) | 001-35758 | 4.4 | May 18, 2015 | |
| 4.72 | Fifty-Eighth Supplemental Indenture, dated as of May 18, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C41-15. | 8-K(1) | 001-35758 | 4.5 | May 18, 2015 | |

| Exhibit Number | Exhibit Description | Incorporated by Reference Form | File No. | Exhibit | Filing Date | Filed Herewith |
|---|---|---|---|---|---|---|
| 4.73 | Fifty-Ninth Supplemental Indenture, dated as of May 26, 2015, by and between SolarCity and the Trustee, related to SolarCity's 2.65% Solar Bonds, Series 2015/C42-3. | 8-K(1) | 001-35758 | 4.2 | May 26, 2015 | |
| 4.74 | Sixtieth Supplemental Indenture, dated as of May 26, 2015, by and between SolarCity and the Trustee, related to SolarCity's 3.60% Solar Bonds, Series 2015/C43-5. | 8-K(1) | 001-35758 | 4.3 | May 26, 2015 | |
| 4.75 | Sixty-First Supplemental Indenture, dated as of May 26, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C44-10. | 8-K(1) | 001-35758 | 4.4 | May 26, 2015 | |
| 4.76 | Sixty-Second Supplemental Indenture, dated as of May 26, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C45-15. | 8-K(1) | 001-35758 | 4.5 | May 26, 2015 | |
| 4.77 | Sixty-Fourth Supplemental Indenture, dated as of June 8, 2015, by and between SolarCity and the Trustee, related to SolarCity's 2.65% Solar Bonds, Series 2015/C46-3. | 8-K(1) | 001-35758 | 4.2 | June 10, 2015 | |
| 4.78 | Sixty-Fifth Supplemental Indenture, dated as of June 8, 2015, by and between SolarCity and the Trustee, related to SolarCity's 3.60% Solar Bonds, Series 2015/C47-5. | 8-K(1) | 001-35758 | 4.3 | June 10, 2015 | |
| 4.79 | Sixty-Sixth Supplemental Indenture, dated as of June 8, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C48-10. | 8-K(1) | 001-35758 | 4.4 | June 10, 2015 | |
| 4.80 | Sixty-Seventh Supplemental Indenture, dated as of June 8, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C49-15. | 8-K(1) | 001-35758 | 4.5 | June 10, 2015 | |
| 4.81 | Sixty-Eighth Supplemental Indenture, dated as of June 16, 2015, by and between SolarCity and the Trustee, related to SolarCity's 2.65% Solar Bonds, Series 2015/C50-3. | 8-K(1) | 001-35758 | 4.2 | June 16, 2015 | |

| Exhibit Number | Exhibit Description | Incorporated by Reference Form | File No. | Exhibit | Filing Date | Filed Herewith |
|---|---|---|---|---|---|---|
| 4.82 | Sixty-Ninth Supplemental Indenture, dated as of June 16, 2015, by and between SolarCity and the Trustee, related to SolarCity's 3.60% Solar Bonds, Series 2015/C51-5. | 8-K(1) | 001-35758 | 4.3 | June 16, 2015 | |
| 4.83 | Seventieth Supplemental Indenture, dated as of June 16, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C52-10. | 8-K(1) | 001-35758 | 4.4 | June 16, 2015 | |
| 4.84 | Seventy-First Supplemental Indenture, dated as of June 16, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C53-15. | 8-K(1) | 001-35758 | 4.5 | June 16, 2015 | |
| 4.85 | Seventy-Second Supplemental Indenture, dated as of June 22, 2015, by and between SolarCity and the Trustee, related to SolarCity's 2.65% Solar Bonds, Series 2015/C54-3. | 8-K(1) | 001-35758 | 4.2 | June 23, 2015 | |
| 4.86 | Seventy-Third Supplemental Indenture, dated as of June 22, 2015, by and between SolarCity and the Trustee, related to SolarCity's 3.60% Solar Bonds, Series 2015/C55-5. | 8-K(1) | 001-35758 | 4.3 | June 23, 2015 | |
| 4.87 | Seventy-Fourth Supplemental Indenture, dated as of June 22, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C56-10. | 8-K(1) | 001-35758 | 4.4 | June 23, 2015 | |
| 4.88 | Seventy-Fifth Supplemental Indenture, dated as of June 22, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C57-15. | 8-K(1) | 001-35758 | 4.5 | June 23, 2015 | |
| 4.89 | Seventy-Eighth Supplemental Indenture, dated as of June 29, 2015, by and between SolarCity and the Trustee, related to SolarCity's 2.65% Solar Bonds, Series 2015/C59-3. | 8-K(1) | 001-35758 | 4.3 | June 29, 2015 | |
| 4.90 | Seventy-Ninth Supplemental Indenture, dated as of June 29, 2015, by and between SolarCity and the Trustee, related to SolarCity's 3.60% Solar Bonds, Series 2015/C60-5. | 8-K(1) | 001-35758 | 4.4 | June 29, 2015 | |

| Exhibit Number | Exhibit Description | Incorporated by Reference Form | File No. | Exhibit | Filing Date | Filed Herewith |
|---|---|---|---|---|---|---|
| 4.91 | Eightieth Supplemental Indenture, dated as of June 29, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C61-10. | 8-K(1) | 001-35758 | 4.5 | June 29, 2015 | |
| 4.92 | Eighty-First Supplemental Indenture, dated as of June 29, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C62-15. | 8-K(1) | 001-35758 | 4.6 | June 29, 2015 | |
| 4.93 | Eighty-Third Supplemental Indenture, dated as of July 14, 2015, by and between SolarCity and the Trustee, related to SolarCity's 2.65% Solar Bonds, Series 2015/C64-3. | 8-K(1) | 001-35758 | 4.3 | July 14, 2015 | |
| 4.94 | Eighty-Fourth Supplemental Indenture, dated as of July 14, 2015, by and between SolarCity and the Trustee, related to SolarCity's 3.60% Solar Bonds, Series 2015/C65-5. | 8-K(1) | 001-35758 | 4.4 | July 14, 2015 | |
| 4.95 | Eighty-Fifth Supplemental Indenture, dated as of July 14, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C66-10. | 8-K(1) | 001-35758 | 4.5 | July 14, 2015 | |
| 4.196 | Eighty-Sixth Supplemental Indenture, dated as of July 14, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C67-15. | 8-K(1) | 001-35758 | 4.6 | July 14, 2015 | |
| 4.97 | Eighty-Eighth Supplemental Indenture, dated as of July 20, 2015, by and between SolarCity and the Trustee, related to SolarCity's 2.65% Solar Bonds, Series 2015/C69-3. | 8-K(1) | 001-35758 | 4.3 | July 21, 2015 | |
| 4.98 | Eighty-Ninth Supplemental Indenture, dated as of July 20, 2015, by and between SolarCity and the Trustee, related to SolarCity's 3.60% Solar Bonds, Series 2015/C70-5. | 8-K(1) | 001-35758 | 4.4 | July 21, 2015 | |
| 4.99 | Ninetieth Supplemental Indenture, dated as of July 20, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C71-10. | 8-K(1) | 001-35758 | 4.5 | July 21, 2015 | |

| Exhibit Number | Exhibit Description | Incorporated by Reference Form | File No. | Exhibit | Filing Date | Filed Herewith |
|---|---|---|---|---|---|---|
| 4.100 | Ninety-First Supplemental Indenture, dated as of July 20, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C72-15. | 8-K(1) | 001-35758 | 4.6 | July 21, 2015 | |
| 4.101 | Ninety-Third Supplemental Indenture, dated as of July 31, 2015, by and between SolarCity and the Trustee, related to SolarCity's 3.00% Solar Bonds, Series 2015/18-3. | 8-K(1) | 001-35758 | 4.3 | July 31, 2015 | |
| 4.102 | Ninety-Fourth Supplemental Indenture, dated as of July 31, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.00% Solar Bonds, Series 2015/19-5. | 8-K(1) | 001-35758 | 4.4 | July 31, 2015 | |
| 4.103 | Ninety-Fifth Supplemental Indenture, dated as of July 31, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.00% Solar Bonds, Series 2015/20-10. | 8-K(1) | 001-35758 | 4.5 | July 31, 2015 | |
| 4.104 | Ninety-Sixth Supplemental Indenture, dated as of July 31, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.75% Solar Bonds, Series 2015/21-15. | 8-K(1) | 001-35758 | 4.6 | July 31, 2015 | |
| 4.105 | Ninety-Eighth Supplemental Indenture, dated as of August 3, 2015, by and between SolarCity and the Trustee, related to SolarCity's 2.65% Solar Bonds, Series 2015/C74-3. | 8-K(1) | 001-35758 | 4.3 | August 3, 2015 | |
| 4.106 | Ninety-Ninth Supplemental Indenture, dated as of August 3, 2015, by and between SolarCity and the Trustee, related to SolarCity's 3.60% Solar Bonds, Series 2015/C75-5. | 8-K(1) | 001-35758 | 4.4 | August 3, 2015 | |
| 4.107 | One Hundredth Supplemental Indenture, dated as of August 3, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C76-10. | 8-K(1) | 001-35758 | 4.5 | August 3, 2015 | |
| 4.108 | One Hundred-and-First Supplemental Indenture, dated as of August 3, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C77-15. | 8-K(1) | 001-35758 | 4.6 | August 3, 2015 | |

| Exhibit Number | Exhibit Description | Incorporated by Reference Form | File No. | Exhibit | Filing Date | Filed Herewith |
|---|---|---|---|---|---|---|
| 4.109 | One Hundred-and-Third Supplemental Indenture, dated as of August 10, 2015, by and between SolarCity and the Trustee, related to SolarCity's 2.65% Solar Bonds, Series 2015/C79-3. | 8-K(1) | 001-35758 | 4.3 | August 10, 2015 | |
| 4.110 | One Hundred-and-Fourth Supplemental Indenture, dated as of August 10, 2015, by and between SolarCity and the Trustee, related to SolarCity's 3.60% Solar Bonds, Series 2015/C80-5. | 8-K(1) | 001-35758 | 4.4 | August 10, 2015 | |
| 4.111 | One Hundred-and-Fifth Supplemental Indenture, dated as of August 10, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C81-10. | 8-K(1) | 001-35758 | 4.5 | August 10, 2015 | |
| 4.112 | One Hundred-and-Sixth Supplemental Indenture, dated as of August 10, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C82-15. | 8-K(1) | 001-35758 | 4.6 | August 10, 2015 | |
| 4.113 | One Hundred-and-Eighth Supplemental Indenture, dated as of August 17, 2015, by and between SolarCity and the Trustee, related to SolarCity's 2.65% Solar Bonds, Series 2015/C84-3. | 8-K(1) | 001-35758 | 4.3 | August 17, 2015 | |
| 4.114 | One Hundred-and-Ninth Supplemental Indenture, dated as of August 17, 2015, by and between SolarCity and the Trustee, related to SolarCity's 3.60% Solar Bonds, Series 2015/C85-5. | 8-K(1) | 001-35758 | 4.4 | August 17, 2015 | |
| 4.115 | One Hundred-and-Tenth Supplemental Indenture, dated as of August 17, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C86-10. | 8-K(1) | 001-35758 | 4.5 | August 17, 2015 | |
| 4.116 | One Hundred-and-Eleventh Supplemental Indenture, dated as of August 17, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C87-15. | 8-K(1) | 001-35758 | 4.6 | August 17, 2015 | |

| Exhibit Number | Exhibit Description | Incorporated by Reference Form | File No. | Exhibit | Filing Date | Filed Herewith |
|---|---|---|---|---|---|---|
| 4.117 | One Hundred-and-Thirteenth Supplemental Indenture, dated as of August 24, 2015, by and between SolarCity and the Trustee, related to SolarCity's 2.65% Solar Bonds, Series 2015/C89-3. | 8-K(1) | 001-35758 | 4.3 | August 24, 2015 | |
| 4.118 | One Hundred-and-Fourteenth Supplemental Indenture, dated as of August 24, 2015, by and between SolarCity and the Trustee, related to SolarCity's 3.60% Solar Bonds, Series 2015/C90-5. | 8-K(1) | 001-35758 | 4.4 | August 24, 2015 | |
| 4.119 | One Hundred-and-Fifteenth Supplemental Indenture, dated as of August 24, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C91-10. | 8-K(1) | 001-35758 | 4.5 | August 24, 2015 | |
| 4.120 | One Hundred-and-Sixteenth Supplemental Indenture, dated as of August 24, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C92-15. | 8-K(1) | 001-35758 | 4.6 | August 24, 2015 | |
| 4.121 | One Hundred-and-Eighteenth Supplemental Indenture, dated as of August 31, 2015, by and between SolarCity and the Trustee, related to SolarCity's 2.65% Solar Bonds, Series 2015/C94-3. | 8-K(1) | 001-35758 | 4.3 | August 31, 2015 | |
| 4.122 | One Hundred-and-Nineteenth Supplemental Indenture, dated as of August 31, 2015, by and between SolarCity and the Trustee, related to SolarCity's 3.60% Solar Bonds, Series 2015/C95-5. | 8-K(1) | 001-35758 | 4.4 | August 31, 2015 | |
| 4.123 | One Hundred-and-Twentieth Supplemental Indenture, dated as of August 31, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C96-10. | 8-K(1) | 001-35758 | 4.5 | August 31, 2015 | |
| 4.124 | One Hundred-and-Twenty-First Supplemental Indenture, dated as of August 31, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C97-15. | 8-K(1) | 001-35758 | 4.6 | August 31, 2015 | |

| Exhibit Number | Exhibit Description | Incorporated by Reference Form | File No. | Exhibit | Filing Date | Filed Herewith |
|---|---|---|---|---|---|---|
| 4.125 | One Hundred-and-Twenty-Second Supplemental Indenture, dated as of September 11, 2015, by and between SolarCity and the Trustee, related to SolarCity's Solar Bonds, Series 2015/R1. | 8-K(1) | 001-35758 | 4.2 | September 11, 2015 | |
| 4.126 | One Hundred-and-Twenty-Third Supplemental Indenture, dated as of September 11, 2015, by and between SolarCity and the Trustee, related to SolarCity's Solar Bonds, Series 2015/R2. | 8-K(1) | 001-35758 | 4.3 | September 11, 2015 | |
| 4.127 | One Hundred-and-Twenty-Fourth Supplemental Indenture, dated as of September 11, 2015, by and between SolarCity and the Trustee, related to SolarCity's Solar Bonds, Series 2015/R3. | 8-K(1) | 001-35758 | 4.4 | September 11, 2015 | |
| 4.128 | One Hundred-and-Twenty-Sixth Supplemental Indenture, dated as of September 14, 2015, by and between SolarCity and the Trustee, related to SolarCity's 2.65% Solar Bonds, Series 2015/C99-3. | 8-K(1) | 001-35758 | 4.3 | September 15, 2015 | |
| 4.129 | One Hundred-and-Twenty-Seventh Supplemental Indenture, dated as of September 14, 2015, by and between SolarCity and the Trustee, related to SolarCity's 3.60% Solar Bonds, Series 2015/C100-5. | 8-K(1) | 001-35758 | 4.4 | September 15, 2015 | |
| 4.130 | One Hundred-and-Twenty-Eighth Supplemental Indenture, dated as of September 14, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C101-10. | 8-K(1) | 001-35758 | 4.5 | September 15, 2015 | |
| 4.131 | One Hundred-and-Twenty-Ninth Supplemental Indenture, dated as of September 14, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C102-15. | 8-K(1) | 001-35758 | 4.6 | September 15, 2015 | |
| 4.132 | One Hundred-and-Thirty-First Supplemental Indenture, dated as of September 28, 2015, by and between SolarCity and the Trustee, related to SolarCity's 2.65% Solar Bonds, Series 2015/C104-3. | 8-K(1) | 001-35758 | 4.3 | September 29, 2015 | |

| Exhibit Number | Exhibit Description | Incorporated by Reference Form | File No. | Exhibit | Filing Date | Filed Herewith |
|---|---|---|---|---|---|---|
| 4.133 | One Hundred-and-Thirty-Second Supplemental Indenture, dated as of September 28, 2015, by and between SolarCity and the Trustee, related to SolarCity's 3.60% Solar Bonds, Series 2015/C105-5. | 8-K(1) | 001-35758 | 4.4 | September 29, 2015 | |
| 4.134 | One Hundred-and-Thirty-Third Supplemental Indenture, dated as of September 28, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C106-10. | 8-K(1) | 001-35758 | 4.5 | September 29, 2015 | |
| 4.135 | One Hundred-and-Thirty-Fourth Supplemental Indenture, dated as of September 28, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C107-15. | 8-K(1) | 001-35758 | 4.6 | September 29, 2015 | |
| 4.136 | One Hundred-and-Thirty-Sixth Supplemental Indenture, dated as of October 13, 2015, by and between SolarCity and the Trustee, related to SolarCity's 2.65% Solar Bonds, Series 2015/C109-3. | 8-K(1) | 001-35758 | 4.3 | October 13, 2015 | |
| 4.137 | One Hundred-and-Thirty-Seventh Supplemental Indenture, dated as of October 13, 2015, by and between SolarCity and the Trustee, related to SolarCity's 3.60% Solar Bonds, Series 2015/C110-5. | 8-K(1) | 001-35758 | 4.4 | October 13, 2015 | |
| 4.138 | One Hundred-and-Thirty-Eighth Supplemental Indenture, dated as of October 13, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C111-10. | 8-K(1) | 001-35758 | 4.5 | October 13, 2015 | |
| 4.139 | One Hundred-and-Thirty-Ninth Supplemental Indenture, dated as of October 13, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C112-15. | 8-K(1) | 001-35758 | 4.6 | October 13, 2015 | |
| 4.140 | One Hundred-and-Forty-First Supplemental Indenture, dated as of October 30, 2015, by and between SolarCity and the Trustee, related to SolarCity's 3.00% Solar Bonds, Series 2015/23-3. | 8-K(1) | 001-35758 | 4.3 | October 30, 2015 | |

| Exhibit Number | Exhibit Description | Incorporated by Reference Form | File No. | Exhibit | Filing Date | Filed Herewith |
|---|---|---|---|---|---|---|
| 4.141 | One Hundred-and-Forty-Second Supplemental Indenture, dated as of October 30, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.00% Solar Bonds, Series 2015/24-5. | 8-K(1) | 001-35758 | 4.4 | October 30, 2015 | |
| 4.142 | One Hundred-and-Forty-Third Supplemental Indenture, dated as of October 30, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.00% Solar Bonds, Series 2015/25-10. | 8-K(1) | 001-35758 | 4.5 | October 30, 2015 | |
| 4.143 | One Hundred-and-Forty-Fourth Supplemental Indenture, dated as of October 30, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.75% Solar Bonds, Series 2015/26-15. | 8-K(1) | 001-35758 | 4.6 | October 30, 2015 | |
| 4.144 | One Hundred-and-Forty-Sixth Supplemental Indenture, dated as of November 4, 2015, by and between SolarCity and the Trustee, related to SolarCity's 2.65% Solar Bonds, Series 2015/C114-3. | 8-K(1) | 001-35758 | 4.3 | November 4, 2015 | |
| 4.145 | One Hundred-and-Forty-Seventh Supplemental Indenture, dated as of November 4, 2015, by and between SolarCity and the Trustee, related to SolarCity's 3.60% Solar Bonds, Series 2015/C115-5. | 8-K(1) | 001-35758 | 4.4 | November 4, 2015 | |
| 4.146 | One Hundred-and-Forty-Eighth Supplemental Indenture, dated as of November 4, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C116-10. | 8-K(1) | 001-35758 | 4.5 | November 4, 2015 | |
| 4.147 | One Hundred-and-Forty-Ninth Supplemental Indenture, dated as of November 4, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C117-15. | 8-K(1) | 001-35758 | 4.6 | November 4, 2015 | |
| 4.148 | One Hundred-and-Fifty-First Supplemental Indenture, dated as of November 16, 2015, by and between SolarCity and the Trustee, related to SolarCity's 2.65% Solar Bonds, Series 2015/C119-3. | 8-K(1) | 001-35758 | 4.3 | November 17, 2015 | |

| Exhibit Number | Exhibit Description | Incorporated by Reference Form | File No. | Exhibit | Filing Date | Filed Herewith |
|---|---|---|---|---|---|---|
| 4.149 | One Hundred-and-Fifty-Second Supplemental Indenture, dated as of November 16, 2015, by and between SolarCity and the Trustee, related to SolarCity's 3.60% Solar Bonds, Series 2015/C120-5. | 8-K(1) | 001-35758 | 4.4 | November 17, 2015 | |
| 4.150 | One Hundred-and-Fifty-Third Supplemental Indenture, dated as of November 16, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C121-10. | 8-K(1) | 001-35758 | 4.5 | November 17, 2015 | |
| 4.151 | One Hundred-and-Fifty-Fourth Supplemental Indenture, dated as of November 16, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C122-15. | 8-K(1) | 001-35758 | 4.6 | November 17, 2015 | |
| 4.152 | One Hundred-and-Fifty-Sixth Supplemental Indenture, dated as of November 30, 2015, by and between SolarCity and the Trustee, related to SolarCity's 2.65% Solar Bonds, Series 2015/C124-3. | 8-K(1) | 001-35758 | 4.3 | November 30, 2015 | |
| 4.153 | One Hundred-and-Fifty-Seventh Supplemental Indenture, dated as of November 30, 2015, by and between SolarCity and the Trustee, related to SolarCity's 3.60% Solar Bonds, Series 2015/C125-5. | 8-K(1) | 001-35758 | 4.4 | November 30, 2015 | |
| 4.154 | One Hundred-and-Fifty-Eighth Supplemental Indenture, dated as of November 30, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C126-10. | 8-K(1) | 001-35758 | 4.5 | November 30, 2015 | |
| 4.155 | One Hundred-and-Fifty-Ninth Supplemental Indenture, dated as of November 30, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C127-15. | 8-K(1) | 001-35758 | 4.6 | November 30, 2015 | |
| 4.156 | One Hundred-and-Sixty-First Supplemental Indenture, dated as of December 14, 2015, by and between SolarCity and the Trustee, related to SolarCity's 2.65% Solar Bonds, Series 2015/C129-3. | 8-K(1) | 001-35758 | 4.3 | December 14, 2015 | |

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|---|---|---|---|---|---|---|
| 4.157 | One Hundred-and-Sixty-Second Supplemental Indenture, dated as of December 14, 2015, by and between SolarCity and the Trustee, related to SolarCity's 3.60% Solar Bonds, Series 2015/C130-5. | 8-K(1) | 001-35758 | 4.4 | December 14, 2015 | |
| 4.158 | One Hundred-and-Sixty-Third Supplemental Indenture, dated as of December 14, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C131-10. | 8-K(1) | 001-35758 | 4.5 | December 14, 2015 | |
| 4.159 | One Hundred-and-Sixty-Fourth Supplemental Indenture, dated as of December 14, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C132-15. | 8-K(1) | 001-35758 | 4.6 | December 14, 2015 | |
| 4.160 | One Hundred-and-Sixty-Sixth Supplemental Indenture, dated as of December 28, 2015, by and between SolarCity and the Trustee, related to SolarCity's 2.65% Solar Bonds, Series 2015/C134-3. | 8-K(1) | 001-35758 | 4.3 | December 28, 2015 | |
| 4.161 | One Hundred-and-Sixty-Seventh Supplemental Indenture, dated as of December 28, 2015, by and between SolarCity and the Trustee, related to SolarCity's 3.60% Solar Bonds, Series 2015/C135-5. | 8-K(1) | 001-35758 | 4.4 | December 28, 2015 | |
| 4.162 | One Hundred-and-Sixty-Eighth Supplemental Indenture, dated as of December 28, 2015, by and between SolarCity and the Trustee, related to SolarCity's 4.70% Solar Bonds, Series 2015/C136-10. | 8-K(1) | 001-35758 | 4.5 | December 28, 2015 | |
| 4.163 | One Hundred-and-Sixty-Ninth Supplemental Indenture, dated as of December 28, 2015, by and between SolarCity and the Trustee, related to SolarCity's 5.45% Solar Bonds, Series 2015/C137-15. | 8-K(1) | 001-35758 | 4.6 | December 28, 2015 | |
| 4.164 | One Hundred-and-Seventy-First Supplemental Indenture, dated as of January 29, 2016, by and between SolarCity and the Trustee, related to SolarCity's 3.00% Solar Bonds, Series 2016/2-3. | 8-K(1) | 001-35758 | 4.3 | January 29, 2016 | |

| Exhibit Number | Exhibit Description | Incorporated by Reference Form | File No. | Exhibit | Filing Date | Filed Herewith |
|---|---|---|---|---|---|---|
| 4.165 | One Hundred-and-Seventy-Second Supplemental Indenture, dated as of January 29, 2016, by and between SolarCity and the Trustee, related to SolarCity's 4.00% Solar Bonds, Series 2016/3-5. | 8-K(1) | 001-35758 | 4.4 | January 29, 2016 | |
| 4.166 | One Hundred-and-Seventy-Third Supplemental Indenture, dated as of January 29, 2016, by and between SolarCity and the Trustee, related to SolarCity's 5.00% Solar Bonds, Series 2016/4-10. | 8-K(1) | 001-35758 | 4.5 | January 29, 2016 | |
| 4.167 | One Hundred-and-Seventy-Fourth Supplemental Indenture, dated as of January 29, 2016, by and between SolarCity and the Trustee, related to SolarCity's 5.75% Solar Bonds, Series 2016/5-15. | 8-K(1) | 001-35758 | 4.6 | January 29, 2016 | |
| 4.168 | One Hundred-and-Seventy-Sixth Supplemental Indenture, dated as of February 26, 2016, by and between SolarCity and the Trustee, related to SolarCity's 4.50% Solar Bonds, Series 2016/7-3. | 8-K(1) | 001-35758 | 4.3 | February 26, 2016 | |
| 4.169 | One Hundred-and-Seventy-Seventh Supplemental Indenture, dated as of February 26, 2016, by and between SolarCity and the Trustee, related to SolarCity's 5.25% Solar Bonds, Series 2016/8-5. | 8-K(1) | 001-35758 | 4.4 | February 26, 2016 | |
| 4.170 | One Hundred-and-Seventy-Eighth Supplemental Indenture, dated as of March 21, 2016, by and between SolarCity and the Trustee, related to SolarCity's 4.40% Solar Bonds, Series 2016/9-1. | 8-K(1) | 001-35758 | 4.2 | March 21, 2016 | |
| 4.171 | One Hundred-and-Seventy-Ninth Supplemental Indenture, dated as of March 21, 2016, by and between SolarCity and the Trustee, related to SolarCity's 5.25% Solar Bonds, Series 2016/10-5. | 8-K(1) | 001-35758 | 4.3 | March 21, 2016 | |
| 4.172 | One Hundred-and-Eightieth Supplemental Indenture, dated as of June 10, 2016, by and between SolarCity and the Trustee, related to SolarCity's 4.40% Solar Bonds, Series 2016/11-1. | 8-K(1) | 001-35758 | 4.2 | June 10, 2016 | |

| Exhibit Number | Exhibit Description | Incorporated by Reference Form | File No. | Exhibit | Filing Date | Filed Herewith |
|---|---|---|---|---|---|---|
| 4.173 | One Hundred-and-Eighty-First Supplemental Indenture, dated as of June 10, 2016, by and between SolarCity and the Trustee, related to SolarCity's 5.25% Solar Bonds, Series 2016/12-5. | 8-K(1) | 001-35758 | 4.3 | June 10, 2016 | |
| 4.174 | One Hundred-and-Eighty-Second Supplemental Indenture, dated as of August 17, 2016, by and between SolarCity and the Trustee, related to SolarCity's 6.50% Solar Bonds, Series 2016/13-18M. | 8-K(1) | 001-35758 | 4.2 | August 17, 2016 | |
| 10.1** | Form of Indemnification Agreement between the Registrant and its directors and officers. | S-1/A | 333-164593 | 10.1 | June 15, 2010 | |
| 10.2** | 2003 Equity Incentive Plan. | S-1/A | 333-164593 | 10.2 | May 27, 2010 | |
| 10.3** | Form of Stock Option Agreement under 2003 Equity Incentive Plan. | S-1 | 333-164593 | 10.3 | January 29, 2010 | |
| 10.4** | Amended and Restated 2010 Equity Incentive Plan. | 10-K | 001-34756 | 10.4 | February 23, 2018 | |
| 10.5** | Form of Stock Option Agreement under 2010 Equity Incentive Plan. | 10-K | 001-34756 | 10.6 | March 1, 2017 | |
| 10.6** | Form of Restricted Stock Unit Award Agreement under 2010 Equity Incentive Plan. | 10-K | 001-34756 | 10.7 | March 1, 2017 | |
| 10.7** | Amended and Restated 2010 Employee Stock Purchase Plan, effective as of February 1, 2017. | 10-K | 001-34756 | 10.8 | March 1, 2017 | |
| 10.8** | 2007 SolarCity Stock Plan and form of agreements used thereunder. | S-1(1) | 333-184317 | 10.2 | October 5, 2012 | |
| 10.9** | 2012 SolarCity Equity Incentive Plan and form of agreements used thereunder. | S-1(1) | 333-184317 | 10.3 | October 5, 2012 | |
| 10.10** | 2010 Zep Solar, Inc. Equity Incentive Plan and form of agreements used thereunder. | S-8(1) | 333-192996 | 4.5 | December 20, 2013 | |
| 10.11** | Offer Letter between the Registrant and Elon Musk dated October 13, 2008. | S-1 | 333-164593 | 10.9 | January 29, 2010 | |
| 10.12** | | | 001-34756 | | | |

| | | | |
|---|---|---|---|
| Performance Stock Option Agreement between the Registrant and Elon Musk dated January 21, 2018. | DEF 14A | Appendix A | February 8, 2018 |

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| Exhibit Number | Exhibit Description | Incorporated by Reference Form | File No. | Exhibit | Filing Date | Filed Herewith |
|---|---|---|---|---|---|---|
| 10.13** | Offer Letter between the Registrant and Jeffrey B. Straubel dated May 6, 2004. | S-1 | 333-164593 | 10.12 | January 29, 2010 | |
| 10.14** | Offer Letter between the Registrant and Deepak Ahuja dated February 21, 2017. | 10-Q | 001-34756 | 10.7 | May 10, 2017 | |
| 10.15 | Indemnification Agreement, dated as of February 27, 2014, by and between the Registrant and J.P. Morgan Securities LLC. | 8-K | 001-34756 | 10.1 | March 5, 2014 | |
| 10.16 | Form of Call Option Confirmation relating to 0.25% Convertible Senior Notes Due March 1, 2019. | 8-K | 001-34756 | 10.2 | March 5, 2014 | |
| 10.17 | Form of Call Option Confirmation relating to 1.25% Convertible Senior Notes Due March 1, 2021. | 8-K | 001-34756 | 10.3 | March 5, 2014 | |
| 10.18 | Form of Warrant Confirmation relating to 0.25% Convertible Senior Notes Due March 1, 2019. | 8-K | 001-34756 | 10.4 | March 5, 2014 | |
| 10.19 | Form of Warrant Confirmation relating to 1.25% Convertible Senior Notes Due March 1, 2021. | 8-K | 001-34756 | 10.5 | March 5, 2014 | |
| 10.20 | Form of Call Option Confirmation relating to 2.375% Convertible Notes due March 15, 2022. | 8-K | 001-34756 | 10.1 | March 22, 2017 | |
| 10.21 | Form of Warrant Confirmation relating to 2.375% Convertible Notes due March 15, 2022. | 8-K | 001-34756 | 10.2 | March 22, 2017 | |
| 10.22† | Supply Agreement between Panasonic Corporation and the Registrant dated October 5, 2011. | 10-K | -001-34756 | 10.50 | February 27, 2012 | |
| 10.23† | Amendment No. 1 to Supply Agreement between Panasonic Corporation and the Registrant dated October 29, 2013. | 10-K | 001-34756 | 10.35A | February 26, 2014 | |
| 10.24 | Agreement between Panasonic Corporation and the Registrant dated July 31, 2014. | 10-Q | 001-34756 | 10.1 | November 7, 2014 | |
| 10.25† | General Terms and Conditions between Panasonic Corporation and the Registrant dated October 1, 2014. | 8-K | 001-34756 | 10.2 | October 11, 2016 | |

| Exhibit Number | Exhibit Description | Incorporated by Reference Form | File No. | Exhibit | Filing Date | Filed Herewith |
|---|---|---|---|---|---|---|
| 10.26 | Letter Agreement, dated as of February 24, 2015, regarding addition of co-party to General Terms and Conditions, Production Pricing Agreement and Investment Letter Agreement between Panasonic Corporation and the Registrant. | 10-K | 001-34756 | 10.25A | February 24, 2016 | |
| 10.27† | Amendment to Gigafactory General Terms, dated March 1, 2016, by and among the Registrant, Panasonic Corporation and Panasonic Energy Corporation of North America. | 8-K | 001-34756 | 10.1 | October 11, 2016 | |
| 10.28† | Production Pricing Agreement between Panasonic Corporation and the Registrant dated October 1, 2014. | 10-Q | 001-34756 | 10.3 | November 7, 2014 | |
| 10.29† | Investment Letter Agreement between Panasonic Corporation and the Registrant dated October 1, 2014. | 10-Q | 001-34756 | 10.4 | November 7, 2014 | |
| 10.30 | Amendment to Gigafactory Documents, dated April 5, 2016, by and among the Registrant, Panasonic Corporation, Panasonic Corporation of North America and Panasonic Energy Corporation of North America. | 10-Q | 001-34756 | 10.2 | May 10, 2016 | |
| 10.31 | ABL Credit Agreement, dated as of June 10, 2015, by and among the Registrant, Tesla Motors Netherlands B.V., certain of the Registrant's and Tesla Motors Netherlands B.V.'s direct or indirect subsidiaries from time to time party thereto, as borrowers, Wells Fargo Bank, National Association, as documentation agent, JPMorgan Chase Bank, N.A., Goldman Sachs Bank USA, Morgan Stanley Senior Funding Inc. and Bank of America, N.A., as syndication agents, the lenders from time to time party thereto, and Deutsche Bank AG New York Branch, as administrative agent and collateral agent. | 8-K | 001-34756 | 10.1 | June 12, 2015 | |

| Exhibit Number | Exhibit Description | Incorporated by Reference Form | File No. | Exhibit | Filing Date | Filed Herewith |
|---|---|---|---|---|---|---|
| 10.32 | First Amendment, dated as of November 3, 2015, to ABL Credit Agreement, dated as of June 10, 2015, by and among the Registrant, Tesla Motors Netherlands B.V., certain of the Registrant's and Tesla Motors Netherlands B.V.'s direct or indirect subsidiaries from time to time party thereto, as borrowers, and the documentation agent, syndication agents, administrative agent, collateral agent and lenders from time to time party thereto. | 10-Q | 001-34756 | 10.1 | November 5, 2015 | |
| 10.33 | Second Amendment, dated as of December 31, 2015, to ABL Credit Agreement, dated as of June 10, 2015, by and among the Registrant, Tesla Motors Netherlands B.V., certain of the Registrant's and Tesla Motors Netherlands B.V.'s direct or indirect subsidiaries from time to time party thereto, as borrowers, and the documentation agent, syndication agents, administrative agent, collateral agent and lenders from time to time party thereto. | 10-K | 001-34756 | 10.28B | February 24, 2016 | |
| 10.34 | Third Amendment, dated as of February 9, 2016, to ABL Credit Agreement, dated as of June 10, 2015, by and among the Registrant, Tesla Motors Netherlands B.V., certain of the Registrant's and Tesla Motors Netherlands B.V.'s direct or indirect subsidiaries from time to time party thereto, as borrowers, and the documentation agent, syndication agents, administrative agent, collateral agent and lenders from time to time party thereto. | 10-K | 001-34756 | 10.28C | February 24, 2016 | |
| 10.35 | Fourth Amendment to Credit Agreement, dated as of July 31, 2016, by and among the Registrant, Tesla Motors Netherlands B.V., the lenders party thereto and Deutsche Bank AG New York Branch, as administrative agent and collateral agent. | 8-K | 001-34756 | 10.1 | August 1, 2016 | |

| Exhibit Number | Exhibit Description | Incorporated by Reference Form | File No. | Exhibit | Filing Date | Filed Herewith |
|---|---|---|---|---|---|---|
| 10.36 | Fifth Amendment to Credit Agreement, dated as of December 15, 2016, among the Registrant, Tesla Motors Netherlands B.V., the lenders party thereto and Deutsche Bank AG, New York Branch, as administrative agent and collateral agent. | 8-K | 001-34756 | 10.1 | December 20, 2016 | |
| 10.37 | Sixth Amendment to Credit Agreement, dated as of June 19, 2017, among the Registrant, Tesla Motors Netherlands B.V., the lenders party thereto and Deutsche Bank AG, New York Branch, as administrative agent and collateral agent. | 10-Q | 001-34756 | 10.1 | August 4, 2017 | |
| 10.38 | Seventh Amendment to the ABL Credit Agreement, dated as of August 11, 2017, by and among the Registrant, Tesla Motors Netherlands B.V., Deutsche Bank AG New York Branch, as administrative agent and collateral agent, and the other agents party thereto. | 8-K | 001-34756 | 10.2 | August 23, 2017 | |
| 10.39 | Eighth Amendment to the ABL Credit Agreement, dated as of March 12, 2018, by and among the Registrant, Tesla Motors Netherlands B.V., Deutsche Bank AG New York Branch, as administrative agent and collateral agent, and the other agents party thereto. | 10-Q | 001-34756 | 10.2 | May 7, 2018 | |
| 10.40 | Ninth Amendment to the ABL Credit Agreement, dated as of May 3, 2018, by and among the Registrant, Tesla Motors Netherlands B.V., Deutsche Bank AG New York Branch, as administrative agent and collateral agent, and the other agents party thereto. | 10-Q | 001-34756 | 10.3 | May 7, 2018 | |
| 10.41 | Tenth Amendment to the ABL Credit Agreement, dated as of December 10, 2018, by and among the Registrant, Tesla Motors Netherlands B.V., Deutsche Bank AG New York Branch, as administrative agent and collateral agent, and the other agents party thereto. | — | — | — | — | X |

| Exhibit Number | Exhibit Description | Incorporated by Reference Form | File No. | Exhibit | Filing Date | Filed Herewith |
|---|---|---|---|---|---|---|
| 10.42† | Agreement for Tax Abatement and Incentives, dated as of May 7, 2015, by and between Tesla Motors, Inc. and the State of Nevada, acting by and through the Nevada Governor's Office of Economic Development. | 10-Q | 001-34756 | 10.1 | August 7, 2015 | |
| 10.43† | Amended and Restated Loan and Security Agreement, dated as of August 17, 2017, by and among Tesla 2014 Warehouse SPV LLC, Tesla Finance LLC, the Lenders and Group Agents from time to time party thereto, and Deutsche Bank AG, New York Branch, as Administrative Agent. | 10-Q | 001-34756 | 10.3 | November 3, 2017 | |
| 10.44† | Amendment No. 1 to Amended and Restated Loan and Security Agreement, dated as of October 18, 2017, by and among Tesla 2014 Warehouse SPV LLC, Tesla Finance LLC, the Lenders and Group Agents from time to time party thereto, Deutsche Bank AG, New York Branch, as Administrative Agent, and Deutsche Bank Trust Company Americas, as Paying Agent. | 10-K | 001-34756 | 10.44 | February 23, 2018 | |
| 10.45 | Amendment No. 2 to Amended and Restated Loan and Security Agreement, dated as of March 23, 2018, by and among Tesla 2014 Warehouse SPV LLC, Tesla Finance LLC, the Lenders and Group Agents from time to time party thereto, Deutsche Bank AG, New York Branch, as Administrative Agent, and Deutsche Bank Trust Company Americas, as Paying Agent. | 10-Q | 001-34756 | 10.4 | May 7, 2018 | |
| 10.46 | Amendment No. 3 to Amended and Restated Loan and Security Agreement, dated as of May 4, 2018, by and among Tesla 2014 Warehouse SPV LLC, Tesla Finance LLC, the Lenders and Group Agents from time to time party thereto, Deutsche Bank AG, New York Branch as Administrative Agent, and Deutsche Bank Trust Company Americas, as Paying Agent. | 10-Q | 001-34756 | 10.1 | November 2, 2018 | |

| Exhibit Number | Exhibit Description | Incorporated by Reference Form | File No. | Exhibit | Filing Date | Filed Herewith |
|---|---|---|---|---|---|---|
| 10.47† | Amendment No. 4 to Amended and Restated Loan and Security Agreement, dated as of August 16, 2018, by and among Tesla 2014 Warehouse SPV LLC, Tesla Finance LLC, the Lenders and Group Agents from time to time party thereto, Deutsche Bank AG, New York Branch as Administrative Agent and Deutsche Bank Trust Company Americas, as Paying Agent. | 10-Q | 001-34756 | 10.3 | November 2, 2018 | |
| 10.48† | Amendment No. 5 to Amended and Restated Loan and Security Agreement, executed on December 28, 2018, by and among Tesla 2014 Warehouse SPV LLC, Tesla Finance LLC, the Lenders and Group Agents from time to time party thereto, Deutsche Bank AG, New York Branch as Administrative Agent and Deutsche Bank Trust Company Americas, as Paying Agent. | — | — | — | — | X |
| 10.49† | Loan and Security Agreement, dated as of August 17, 2017, by and among LML Warehouse SPV, LLC, Tesla Finance LLC, the Lenders and Group Agents from time to time party thereto, and Deutsche Bank AG, New York Branch, as Administrative Agent. | 10-Q | 001-34756 | 10.4 | November 3, 2017 | |
| 10.50† | Amendment No. 1 to Loan and Security Agreement, dated as of October 18, 2017, by and among LML Warehouse SPV, LLC, Tesla Finance LLC, the Lenders and Group Agents from time to time party thereto, Deutsche Bank AG, New York Branch, as Administrative Agent, and Deutsche Bank Trust Company Americas, as Paying Agent. | 10-K | 001-34756 | 10.46 | February 23, 2018 | |
| 10.51 | Amendment No. 2 to Loan and Security Agreement, dated as of March 23, 2018, by and among LML Warehouse SPV, LLC, Tesla Finance LLC, the Lenders and Group Agents from time to time party thereto, Deutsche Bank AG, New York Branch, as Administrative Agent, and Deutsche Bank Trust Company Americas, as Paying Agent. | 10-Q | 001-34756 | 10.5 | May 7, 2018 | |

| Exhibit Number | Exhibit Description | Incorporated by Reference Form | File No. | Exhibit | Filing Date | Filed Herewith |
|---|---|---|---|---|---|---|
| 10.52 | Amendment No. 3 to Loan and Security Agreement, dated as of May 4, 2018, by and among LML Warehouse SPV, LLC, the Lenders and Group Agents from time to time party thereto, and Deutsche Bank AG, New York Branch, as Administrative Agent. | 10-Q | 001-34756 | 10.2 | November 2, 2018 | |
| 10.53† | Amendment No. 4 to Loan and Security Agreement, dated as of August 16, 2018, by and among LML Warehouse SPV, LLC, the Lenders and Group Agents from time to time party thereto, and Deutsche Bank AG, New York Branch, as Administrative Agent. | 10-Q | 001-34756 | 10.4 | November 2, 2018 | |
| 10.54† | Payoff and Termination Letter, executed on December 28, 2018, by and among LML Warehouse SPV, LLC, the Lenders and Group Agents from time to time party thereto, and Deutsche Bank AG, New York Branch, as Administrative Agent, relating to Loan and Security Agreement. | — | — | — | — | X |
| 10.55† | Loan and Security Agreement, executed on December 28, 2018, by and among LML 2018 Warehouse SPV, LLC, Tesla Finance LLC, the Lenders and Group Agents from time to time party thereto, Deutsche Bank Trust Company Americas, as Paying Agent, and Deutsche Bank AG, New York Branch, as Administrative Agent. | — | — | — | — | X |
| 10.56 | Purchase Agreement, dated as of August 11, 2017, by and among the Registrant, SolarCity and Goldman Sachs & Co. LLC and Morgan Stanley & Co. LLC as representatives of the several initial purchasers named therein. | 8-K | 001-34756 | 10.1 | August 23, 2017 | |

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

| Exhibit Number | Exhibit Description | Incorporated by Reference Form | File No. | Exhibit | Filing Date | Filed Herewith |
|---|---|---|---|---|---|---|
| 10.61 | Fourth Amendment to Amended and Restated Agreement For Research & Development Alliance on Triex Module Technology, effective as of March 30, 2015, by and between The Research Foundation For The State University of New York, on behalf of the College of Nanoscale Science and Engineering of the State University of New York, and Silevo, Inc. | 10-Q(1) | 001-35758 | 10.16d | May 6, 2015 | |
| 10.62 | Fifth Amendment to Amended and Restated Agreement For Research & Development Alliance on Triex Module Technology, effective as of June 30, 2015, by and between The Research Foundation For The State University of New York, on behalf of the College of Nanoscale Science and Engineering of the State University of New York, and Silevo, LLC. | 10-Q(1) | 001-35758 | 10.16e | July 30, 2015 | |
| 10.63 | Sixth Amendment to Amended and Restated Agreement For Research & Development Alliance on Triex Module Technology, effective as of September 1, 2015, by and between The Research Foundation For The State University of New York, on behalf of the College of Nanoscale Science and Engineering of the State University of New York, and Silevo, LLC. | 10-Q(1) | 001-35758 | 10.16f | October 30, 2015 | |
| 10.64 | Seventh Amendment to Amended and Restated Agreement For Research & Development Alliance on Triex Module Technology, effective as of October 9, 2015, by and between The Research Foundation For The State University of New York, on behalf of the College of Nanoscale Science and Engineering of the State University of New York, and Silevo, LLC. | 10-Q(1) | 001-35758 | 10.16g | October 30, 2015 | |

| Exhibit Number | Exhibit Description | Incorporated by Reference Form | File No. | Exhibit | Filing Date | Filed Herewith |
|---|---|---|---|---|---|---|
| 10.65 | Eighth Amendment to Amended and Restated Agreement For Research & Development Alliance on Triex Module Technology, effective as of October 26, 2015, by and between The Research Foundation For The State University of New York, on behalf of the College of Nanoscale Science and Engineering of the State University of New York, and Silevo, LLC. | 10-Q(1) | 001-35758 | 10.16h | October 30, 2015 | |
| 10.66 | Ninth Amendment to Amended and Restated Agreement For Research & Development Alliance on Triex Module Technology, effective as of December 9, 2015, by and between The Research Foundation For The State University of New York, on behalf of the College of Nanoscale Science and Engineering of the State University of New York, and Silevo, LLC. | 10-K(1) | 001-35758 | 10.16i | February 10, 2016 | |
| 10.67 | Tenth Amendment to Amended and Restated Agreement For Research & Development Alliance on Triex Module Technology, effective as of March 31, 2017, by and between The Research Foundation For The State University of New York, on behalf of the Colleges of Nanoscale Science and Engineering of the State University of New York, and Silevo, LLC. | 10-Q | 001-34756 | 10.8 | May 10, 2017 | |
| 21.1 | List of Subsidiaries of the Registrant | — | — | — | — | X |
| 23.1 | Consent of PricewaterhouseCoopers LLP, Independent Registered Public Accounting Firm | — | — | — | — | X |
| 31.1 | Rule 13a-14(a) / 15(d)-14(a) Certification of Principal Executive Officer | — | — | — | — | X |
| 31.2 | Rule 13a-14(a) / 15(d)-14(a) Certification of Principal Financial Officer | — | — | — | — | X |
| 32.1* | Section 1350 Certifications | — | — | — | — | |
| 101.INS | XBRL Instance Document | | | | | |

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| Exhibit Number | Exhibit Description | Incorporated by Reference Form | File No. | Exhibit | Filing Date | Filed Herewith |
|---|---|---|---|---|---|---|
| 101.SCH | XBRL Taxonomy Extension Schema Document | | | | | |
| 101.CAL | XBRL Taxonomy Extension Calculation Linkbase Document. | | | | | |
| 101.DEF | XBRL Taxonomy Extension Definition Linkbase Document | | | | | |
| 101.LAB | XBRL Taxonomy Extension Label Linkbase Document | | | | | |
| 101.PRE | XBRL Taxonomy Extension Presentation Linkbase Document | | | | | |

* Furnished herewith
** Indicates a management contract or compensatory plan or arrangement
† Confidential treatment has been requested for portions of this exhibit
(1) Indicates a filing of SolarCity

ITEM 16. SUMMARY

None

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

| | |
|---|---|
| | Tesla, Inc. |
| Date: February 19, 2019 | /s/ Elon Musk<br>Elon Musk<br>Chief Executive Officer<br>(Principal Executive Officer) |

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

| Signature | Title | Date |
|---|---|---|
| /s/ Elon Musk<br>Elon Musk | Chief Executive Officer and Director (Principal Executive Officer) | February 19, 2019 |
| /s/ Deepak Ahuja<br>Deepak Ahuja | Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer) | February 19, 2019 |
| /s/ Brad W. Buss<br>Brad W. Buss | Director | February 19, 2019 |
| /s/ Robyn Denholm<br>Robyn Denholm | Director | February 19, 2019 |
| /s/ Ira Ehrenpreis<br>Ira Ehrenpreis | Director | February 19, 2019 |
| /s/ Lawrence J. Ellison<br>Lawrence J. Ellison | Director | February 19, 2019 |
| /s/ Antonio J. Gracias<br>Antonio J. Gracias | Director | February 19, 2019 |

| | | |
|---|---|---|
| /s/ James Murdoch<br>James Murdoch | Director | February 19, 2019 |
| /s/ Kimbal Musk<br>Kimbal Musk | Director | February 19, 2019 |
| /s/ Linda Johnson Rice<br>Linda Johnson Rice | Director | February 19, 2019 |
| /s/ Kathleen Wilson-Thompson<br>Kathleen Wilson-Thompson | Director | February 19, 2019 |
| Stephen T. Jurvetson | Director | |

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