First Solar®

First Solar
2016 Annual Report

About First Solar

First Solar is a leading global provider of comprehensive photovoltaic (PV) solar systems which use its advanced module and system technology. The company's integrated power plant solutions deliver an economically attractive alternative to fossil-fuel electricity generation today. From raw material sourcing through end-of-life module recycling, First Solar's renewable energy systems protect and enhance the environment. With over 17 gigawatts installed worldwide, First Solar has developed, financed, engineered, constructed, and operated some of the world's largest and most successful PV power plants in existence, establishing the company as the partner of choice for customers globally.

First Solar®

To Our Shareholders

As First Solar's new CEO I look forward to leading the company through this challenging, yet exciting time. The solar module industry is continuously changing, and in the second half of 2016 it experienced sudden and dramatic pricing declines, resulting largely from a combination of increasing capacity and weakening demand in certain markets. From an operational standpoint First Solar continued to perform well, and we ended the year in a very strong financial position. However, these challenging market conditions necessitated that we undertake a strategic review of our business to determine a path forward that would allow us to generate, over the long-term, attractive returns for our shareholders despite challenging market headwinds.

The outcome of this strategic review was an action plan that allows us to bring forward production of our Series 6 product into 2018, a year earlier than previously expected. The ability to utilize our existing manufacturing facilities is a key enabler of the Series 6 acceleration; it also reduces the expected capital spend. However, transitioning to Series 6 requires us to ramp down our Series 4 production over the next six quarters, as well as to discontinue development of our Series 5 module. While these decisions resulted in significant, primarily non-cash, charges that impacted our 2016 results, these actions were necessary in order to accommodate the Series 6 transition.

Based on extensive analysis and customer feedback, the superiority of Series 6 has become clear.

MARK WIDMAR
CEO

When we first introduced the Series 6 module in early 2016, we highlighted that we anticipated this product to have a compelling combination of high efficiency, low cost, and balance of system compatibility. The Series 4 module remains a highly competitive product, with near 17% conversion efficiency and a low cost per watt. However, based on extensive analysis and customer feedback, the superiority of Series 6 has become clear. Firstly, Series 6 is expected to have improved conversion efficiency, which combined with the larger module size, results in a greater than 420 watt panel. Additionally, scaling of the module size is expected to result in an approximately 40% lower module cost per watt as compared to Series 4. Relative to Series 4, we also expect significant balance of systems savings and increased field installation velocity. By preserving our up to 10% energy yield advantage, relative to silicon based technologies in key solar regions, the value proposition of our new Series 6 product becomes even more compelling. Taken together, these attributes highlight the potential for the Series 6 product to have significant competitive advantages.

While there are certain challenges inherent in transitioning to this new product, we are undertaking several measures to reduce potential risks. Most significantly, our Series 6 modules will utilize essentially the same underlying solar cell technology as our Series 4 product. As a result we believe the core technology risk involved in the transition to be low. In addition, we are developing Series 6 by leveraging more than a decade of internal R&D capabilities and learnings, and deploying it in our existing factories with skilled manufacturing teams. We are also harnessing the external expertise of long-trusted equipment suppliers for our core process technology tools.

The key steps to enable the manufacturing of our Series 6 product are already underway. Towards the end of 2016 we began ramping down a portion of our Series 4 manufacturing in Ohio, to prepare for the deployment of our first Series 6 line. Major equipment for this first line has already been ordered and we are targeting first production by the second half of 2018.

SERIES 6 PV MODULE

While we are still in the early stages of our transition to Series 6 we are pleased with our progress thus far, and we will continue to provide regular updates to our shareholders.

Technology & Operations

In addition to our decision to accelerate our transition to Series 6 we had a number of notable technology highlights in 2016. In February we set a new cell efficiency record of 22.1%, which is the ninth substantial update to our cell roadmap since 2011. Our research improvements continue to be manifest in our production efficiencies as highlighted by the new record fleet and lead line efficiency achieved in 2016. Our full year 2016 conversion efficiency averaged 16.4%, an 80 basis point improvement from 2015. In addition our lead line efficiency averaged 16.8% in the fourth quarter of 2016, which is a 40 basis point improvement versus the same quarter in 2015. Series 6 will build upon these achievements in our Series 4 technology, while continuing to enable further improvements in conversion efficiency, cost and installation velocity.

Our operational achievements in 2016 were also notable. Production volume increased 24% to a record 3.1 gigawatts (GW)DC. Our Engineering, Procurement and Construction (EPC) group remains one of the largest global solar installers and reached 7.3GW DC of cumulative installed capacity by year end. Additionally, at the end of last year we had nearly 7GW DC of assets under contract in our portfolio of solar power plants managed by our Operations and Maintenance (O&M) group. This firmly establishes First Solar as the largest solar O&M provider in the world. These achievements highlight the depth of experience behind the fully integrated solutions that we have to offer our customers.

OPERATIONAL ACHIEVEMENTS

3.1GW
2016 PRODUCTION VOLUME

7.3GW
EPC CUMULATIVE INSTALLED CAPACITY

7GW
O&M CONTRACTED ASSETS

Global Markets

With the progress we made in a number of global markets during the past year, we continue to establish a foundation for future Series 6 product success. In 2016 we shipped over 2.7GW DC of modules and our EPC group installed 4GW DC. International shipments continued to grow to a total of 870 megawatts (MW) DC in 2016, based on the strength of shipments to India and the Middle East, two regions where our technology has a significant energy yield advantage. The following are highlights of new project bookings from some of our important markets.

With other sales in states ranging from the Intermountain West to the Mid-Atlantic we are seeing increasing signs of broad acceptance and growth of solar.

UNITED STATES

Despite the challenging market conditions in the second half of 2016 we generated meaningful bookings in the United States during this past year.

Firstly, in terms of project development we signed PPAs with SCE for two projects totaling over 145MW AC in the western U.S. In addition, we signed a PPA for 40MW AC with MCE, a leading Community Choice Aggregator (CCA) in California. Subject to certain conditions and based on load increase from a potential MCE expansion, this PPA may be increased to 160MW AC. CCAs are becoming increasingly important providers of electricity to customers, both in California and a growing number of other states. CCAs offer their customers the benefits of local control, competitive power rates and access to a higher mix of renewable energy.

The growth of CCAs across the nation also mirrors the growth of community solar that is occurring across the United States. In 2016 we signed module supply agreements of over 120MW DC for community solar projects in diverse states ranging from the upper Midwest to the Southwest. With a much lower cost than rooftop solar, community solar is a highly compatible model for utilities that is expected to grow substantially in the coming years.

Module sale activity in the U.S. was also strong during the past year. In early 2016 we announced an agreement with a leading developer in the Southeast to supply over 200MW DC to projects in Georgia, Mississippi, Arkansas and Tennessee, states with emerging solar markets. Shipments to these projects are expected to take place in 2017 and 2018. More recently we signed a 200MW DC supply agreement with a leading independent power producer for a project located in the Southwest. With other sales in states ranging from the Intermountain West to the Mid-Atlantic we are seeing increasing signs of broad acceptance and growth of solar.

INTERNATIONAL MARKETS

In the Asia-Pacific region, Australia and Japan were two of our strongest markets during this past year.

Australia

In Australia we reached a new milestone early in 2017 with the award of a PPA for our first self-developed project in the country, the 49MW AC Manildra Solar Farm. In addition, we have recently signed two separate module supply agreements, which together total more than 200MW DC. The 140MW DC supply agreement with Sun Metals will provide energy to the company's zinc refinery and will be the largest solar power plant in Australia once completed. In a separate transaction we will be supplying 63MW DC to the first phase of the Kidston solar project, which will be co-located with a pumped storage project. We are pleased with our recent success in Australia, and the growth potential of solar in a region where our technology holds a strong energy yield advantage.

63MW DC
KIDSTON SOLAR PROJECT

49MW AC
MANILDRA SOLAR FARM

Japan

In Japan we continue to see the growth of our development pipeline in the country. In 2016 and early 2017 we added to our contracted development pipeline, which is now over 180MW DC and includes 10 smaller projects which have commenced operations. In addition, we have over 350MW DC of late-stage bookings opportunities that we are working to close.

340MW DC

2016 MODULE SALES IN INDIA

200MW AC

MODULE SUPPLIER OF DUBAI PROJECT

100MW DC

MODULE SUPPLY AGREEMENTS IN FRANCE

160MW DC

MODULE SUPPLY AGREEMENTS IN TURKEY

India

In India we crossed the 1,000MW DC module shipment milestone in early 2016 and have continued to sign additional volume over the course of the year. For the entire year we booked over 340MW DC of module sales and signed a PPA for a 60MW AC development project. This latest project booking brings our total contracted development pipeline in the country to 260MW AC.

Middle East

In the Middle East, in 2016 we supplied modules to a 200MW AC landmark project in Dubai. Additionally, we completed the 53MW AC Shams Ma'an project in Jordan, which accounts for approximately 1% of the country's total generating capacity.

Europe

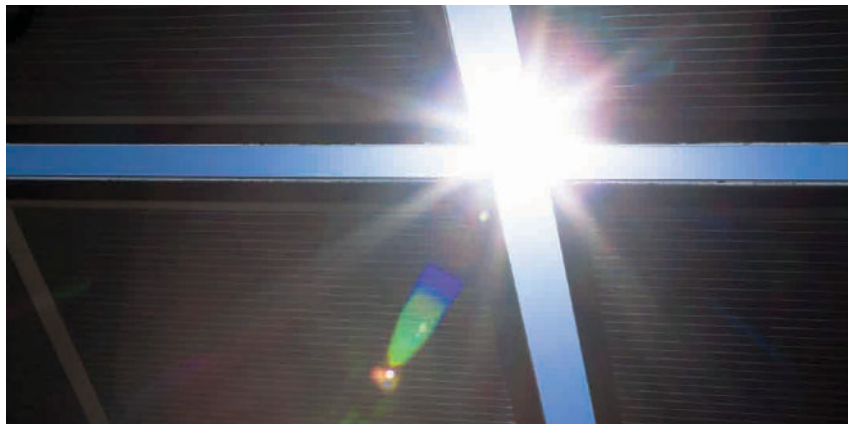
In Europe we continue to see opportunities in sunnier regions such as France and Turkey. In France we signed module supply agreements of over 100MW DC and in Turkey we booked agreements for module delivery of 160MW DC.

Conclusion

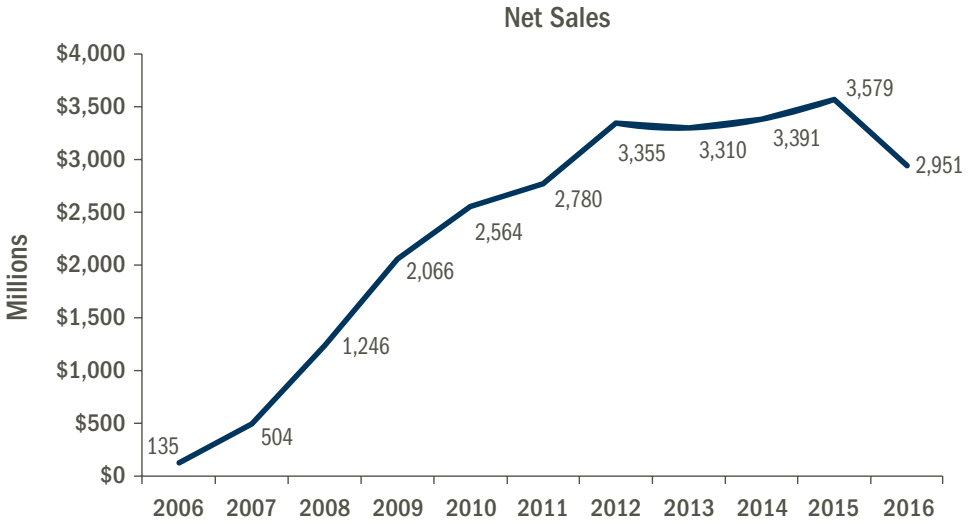
While 2016 saw challenging market conditions that required First Solar to undertake significant restructuring actions in order to accelerate Series 6, I feel strongly that the company has the right technology, the talent, and financial resources necessary to weather the current environment and emerge stronger. Our CdTe technology has long been a key source of our competitive advantage; with our Series 6 module we have the opportunity to realize its full potential.

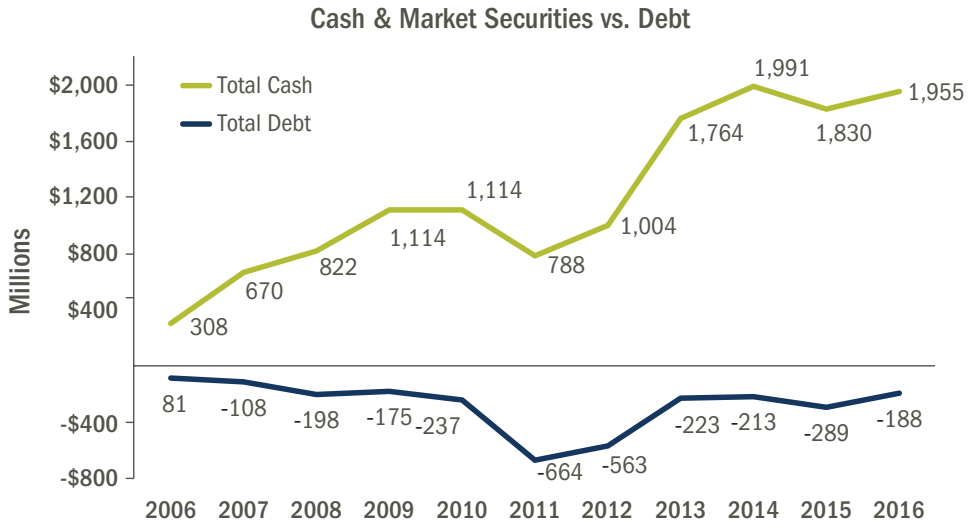
As a company we will continue to invest in technology, focus on delivering compelling solutions to our customers, and manage the business in a financially responsible way. As we execute on these priorities we believe that we can position First Solar on a path to future growth and success which will create value for our shareholders. This is an exciting time for First Solar and I look forward to the opportunities ahead.

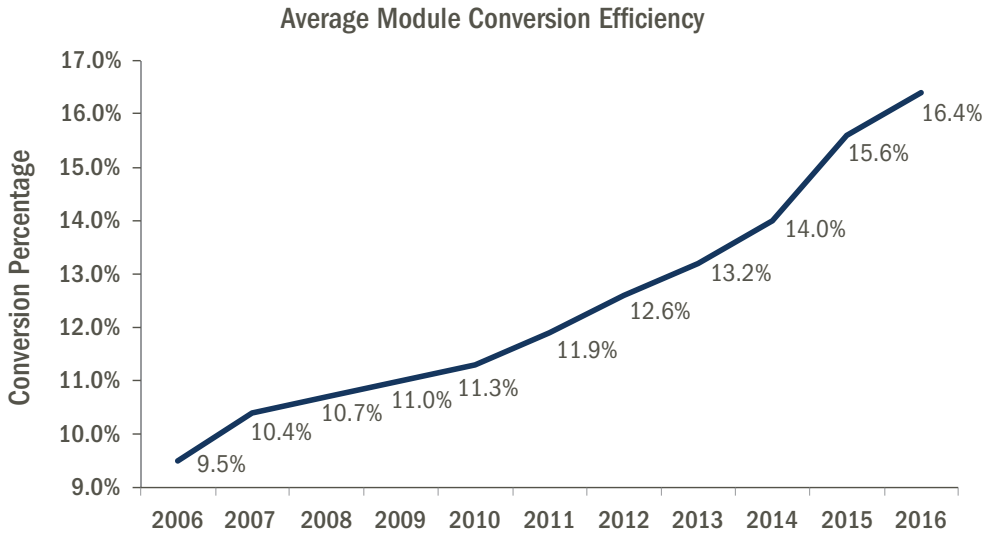
Our CdTe technology has long been a key source of our competitive advantage and with our Series 6 module we have the opportunity to realize its full potential.



2016 Financial Results







UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

Form 10-K

(Mark one)

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

For the fiscal year ended December 31, 2016

or

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

For the transition period from to

Commission file number: 001-33156

First Solar, Inc.

(Exact name of registrant as specified in its charter)

Delaware	**20-4623678**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)

350 West Washington Street, Suite 600
Tempe, Arizona 85281
(Address of principal executive offices, including zip code)

(602) 414-9300
(Registrant's telephone number, including area code)

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

Title of each class	**Name of each exchange on which registered**
Common stock, $0.001 par value	The NASDAQ Stock Market LLC

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

None

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

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

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

Indicate by check mark whether the registrant has submitted electronically 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 (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ☒ No ☐

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

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

Large accelerated filer ☒	Accelerated filer ☐	Non-accelerated filer ☐ (Do not check if a smaller reporting company)	Smaller reporting company ☐

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

The aggregate market value of the registrant's common stock, $0.001 par value per share, held by non-affiliates of the registrant on June 30, 2016, the last business day of the registrant's most recently completed second fiscal quarter, was approximately $3.4 billion (based on the closing sales price of the registrant's common stock on that date). As of February 17, 2017, 104,044,691 shares of the registrant's common stock, $0.001 par value per share, were issued and outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

The information required by Part III of this Annual Report on Form 10-K, to the extent not set forth herein, is incorporated by reference from the registrant's definitive proxy statement relating to the Annual Meeting of Shareholders to be held in 2017, which will be filed with the Securities and Exchange Commission within 120 days after the end of the fiscal year to which this Annual Report on Form 10-K relates.

FIRST SOLAR, INC. AND SUBSIDIARIES

FORM 10-K FOR THE YEAR ENDED DECEMBER 31, 2016

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Throughout this Annual Report on Form 10-K, we refer to First Solar, Inc. and its consolidated subsidiaries as "First Solar," "the Company," "we," "us," and "our."

NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K contains forward-looking statements within the meaning of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and the Securities Act of 1933, as amended (the "Securities Act"), which are subject to risks, uncertainties, and assumptions that are difficult to predict. All statements in this Annual Report on Form 10-K, other than statements of historical fact, are forward-looking statements. These forward-looking statements are made pursuant to safe harbor provisions of the Private Securities Litigation Reform Act of 1995. The forward-looking statements include statements, among other things, concerning: effects resulting from certain module manufacturing changes and associated restructuring activities; our business strategy, including anticipated trends and developments in and management plans for our business and the markets in which we operate; future financial results, operating results, revenues, gross margin, operating expenses, products, projected costs (including estimated future module collection and recycling costs), warranties, solar module technology and cost reduction roadmaps, restructuring, product reliability, investments in unconsolidated affiliates, and capital expenditures; our ability to continue to reduce the cost per watt of our solar modules; our ability to expand manufacturing capacity worldwide; our ability to reduce the costs to construct photovoltaic ("PV") solar power systems; research and development ("R&D") programs and our ability to improve the conversion efficiency of our solar modules; sales and marketing initiatives; and competition. In some cases, you can identify these statements by forward-looking words, such as "estimate," "expect," "anticipate," "project," "plan," "intend," "seek," "believe," "forecast," "foresee," "likely," "may," "should," "goal," "target," "might," "will," "could," "predict," "continue," and the negative or plural of these words, and other comparable terminology. Forward-looking statements are only predictions based on our current expectations and our projections about future events. All forward-looking statements included in this Annual Report on Form 10-K are based upon information available to us as of the filing date of this Annual Report on Form 10-K. You should not place undue reliance on these forward-looking statements. We undertake no obligation to update any of these forward-looking statements for any reason. These forward-looking statements involve known and unknown risks, uncertainties, and other factors that may cause our actual results, levels of activity, performance, or achievements to differ materially from those expressed or implied by these statements, including, but not limited to:

- structural imbalances in global supply and demand for PV modules;
- the market for renewable energy, including solar energy;
- our competitive position and other key competitive factors;
- reduction, elimination, or expiration of government subsidies, policies, and support programs for solar energy projects;
- our ability to execute on our long term strategic plan;
- our ability to execute on our solar module technology and cost reduction roadmaps;
- interest rate fluctuations and both our and our customers' ability to secure financing;
- our ability to attract new customers and to develop and maintain existing customer and supplier relationships;
- our ability to successfully develop and complete our systems business projects;
- our ability to convert existing production facilities to support new product lines, such as Series 6 module manufacturing;
- general economic and business conditions, including those influenced by U.S., international, and geopolitical events;

- environmental responsibility, including with respect to cadmium telluride ("CdTe") and other semiconductor materials;
- claims under our limited warranty obligations;
- changes in, or the failure to comply with, government regulations and environmental, health, and safety requirements;
- future collection and recycling costs for solar modules covered by our module collection and recycling program;
- our ability to protect our intellectual property;
- our ability to prevent and/or minimize the impact of cyber attacks or other breaches of our information systems;
- our continued investment in research and development;
- the supply and price of components and raw materials, including CdTe;
- our ability to attract and retain key executive officers and associates; and
- all other matters discussed in Item 1A. "Risk Factors," and elsewhere in this Annual Report on Form 10-K.

You should carefully consider the risks and uncertainties described under this section.

Unit of Power

When referring to our manufacturing capacity, total sales, and solar module sales, the unit of electricity in watts for megawatts ("MW") and gigawatts ("GW") is direct current ("DC") unless otherwise noted. When referring to our PV solar power systems, the unit of electricity in watts for MW and GW is alternating current ("AC") unless otherwise noted.

PART I

Item 1. *Business*

Company Overview

We are a leading global provider of comprehensive PV solar energy solutions. We design, manufacture, and sell PV solar modules with an advanced thin-film semiconductor technology and also develop, design, construct, and sell PV solar power systems that primarily use the modules we manufacture. Additionally, we provide operations and maintenance ("O&M") services to system owners that use solar modules manufactured by us or by third-party manufacturers. We have substantial, ongoing research and development efforts focused on module and system-level innovations. We are the world's largest thin-film PV solar module manufacturer and one of the world's largest PV solar module manufacturers. Our mission is to create enduring value by enabling a world powered by clean, affordable solar energy.

In addressing overall global demand for PV solar electricity, our high-efficiency CdTe modules and fully integrated systems business can provide competitively priced utility-scale PV solar energy solutions to system owners and low cost electricity to end-users. Our systems business has enabled us to drive cost reduction across the value chain and deliver compelling solutions to our customers. We are committed to continually lowering the cost of solar electricity and plan to compete on an economic basis with conventional fossil-fuel-based power generation.

In furtherance of our goal of delivering affordable solar electricity, we are continually focused on reducing costs in the following areas: module manufacturing costs, balance of systems ("BoS") costs (consisting of the costs of the components of a system other than the modules that we manufacture), project development costs, capital costs, and operating costs. First, with respect to our module manufacturing costs, we believe our advanced CdTe technology has allowed us to reduce our average module manufacturing costs to among the lowest in the world for modules produced on a commercial scale, based on publicly available information. We believe that our module manufacturing cost is competitive, on a comparable basis with, or is lower than, those of traditional crystalline silicon solar module manufacturers. We also recently introduced our next generation CdTe module technology, Series 6™ ("Series 6"), which is expected to enable the production of modules with a larger form factor, better product attributes, and a lower cost structure. By continuing to make module technology innovations, improving module conversion efficiency and energy yield, increasing production line throughput, and lowering raw material and operating costs, we believe that we can further reduce our manufacturing cost per watt and increase the cost competitiveness of our modules relative to traditional crystalline silicon solar module manufacturers. Second, with respect to our BoS costs, we have programs that target key improvements in components and system designs, which, when combined with continued improvements in module technology, volume procurement around standardized hardware platforms, the use of innovative installation techniques and know-how, and accelerated installation times, are expected to result in continued reductions in installed system costs. Third, with respect to our project development costs, we seek optimal site locations in an effort to maximize solar resources and minimize transmission and permitting costs, and to accelerate lead times to electricity generation. Fourth, the remaining primary system cost relates to the actual operating costs of a system, which include the O&M costs of the plant. We believe that our O&M services are an important driver to further reductions in the levelized cost of electricity ("LCOE") of a PV solar power system through seamless grid integration, increased reliability, and maximization of the availability of the systems we operate and maintain for our customers.

In addition to enabling the cost reductions described above, we believe that combining our vertical integration across the solar value chain enables us to be more competitive, accelerate the adoption of our technology in PV solar power systems, and successfully sell into key markets around the world. Our vertically integrated capabilities enable us to maximize value and mitigate risk for our customers and

offer valuable benefits such as grid integration and stabilization, thereby positioning us to deliver meaningful PV solar energy solutions to varied energy problems worldwide. We seek to offer leadership across the entire solar value chain, resulting in more reliable and cost effective PV solar energy solutions for our customers, and furthering our mission to create enduring value by enabling a world powered by clean, affordable solar electricity.

Market Overview

Solar energy is a growing form of renewable energy with numerous economic and environmental benefits that make it an attractive complement to, and/or substitute for, traditional forms of electricity generation. In recent years, the price of PV solar power systems, and accordingly the cost of producing electricity from such systems, has dropped to levels that are competitive with or even below the wholesale price of electricity in many markets. The rapid price decline that PV solar energy has experienced in recent years opens new possibilities to develop systems in some locations with limited or no financial incentives. The fact that a PV solar power system requires no fuel provides a unique and valuable hedging benefit to owners of such systems relative to traditional electricity generation assets. Once installed, PV solar power systems can function for 25 or more years with relatively less maintenance or oversight compared to traditional forms of electricity generation. In addition to these economic benefits, solar energy has several environmental benefits. For example, PV solar power systems do not generate any greenhouse gas or other emissions and use no or minimal amounts of water compared to traditional forms of electricity generation. Worldwide solar markets continue to develop, aided by the above factors as well as demand elasticity resulting from declining industry average selling prices, both at the module and system level, which make solar power more affordable.

The solar industry continues to be characterized by intense pricing competition, both at the module and system levels. In particular, module average selling prices in the United States and several other key markets have experienced an accelerated decline in recent months, and module average selling prices are expected to continue to decline to some degree in the short and medium terms according to market forecasts. In the aggregate, we believe manufacturers of solar modules and cells have significant installed production capacity, relative to global demand, and the ability for additional capacity expansion. We believe the solar industry may, from time to time, experience periods of structural imbalance between supply and demand (i.e., where production capacity exceeds global demand), and that such periods will put downward pressure on pricing. We believe the solar industry is currently in such a period. Additionally, intense competition at the system level may result in an environment in which pricing falls rapidly, thereby further increasing demand for solar energy solutions but constraining the ability for project developers; engineering, procurement, and construction (“EPC”) companies; and vertically-integrated solar companies such as First Solar to sustain meaningful and consistent profitability. In light of such market realities, we are executing our long term strategic plan, as described below, under which we are focusing on our competitive strengths. Such strengths include our advanced module and system technologies as well as our vertically-integrated business model that enables us to provide utility-scale PV solar energy solutions to key markets with current electricity needs.

Strategy and Competitive Strengths

To build upon our leading industry position and to remain one of the preferred providers of PV solar energy solutions, we are pursuing the following strategies: differentiation, sustainable growth, and financial viability.

Differentiation

- As a field-proven technology, our CdTe solar modules offer certain advantages over traditional crystalline silicon based solar modules by delivering competitive efficiency, higher real-world

energy yield, and long-term reliability. Proven to deliver up to 10% more usable energy per nameplate watt than competing technologies in certain geographic markets, and with a record of reliable system performance, our CdTe technology delivers more energy, more consistently, over the lifetime of a PV solar power system. Our recently introduced Series 6 module technology, with its combination of high conversion efficiencies, low manufacturing costs, larger form factor, and BoS compatibility, is expected to further enhance our competitive position once production of such module technology begins in 2018. We expect the transition to Series 6 module technology will also enable us to maximize the intrinsic cost advantage of CdTe thin-film technology versus crystalline silicon.

- In terms of energy yield, in many climates, our CdTe solar modules provide a significant energy production advantage over most crystalline silicon solar modules of equivalent efficiency rating. For example, our CdTe solar modules provide a superior temperature coefficient, which results in stronger system performance in typical high insolation climates as the majority of a system's generation, on average, occurs when module temperatures are well above 25°C (standard test conditions). In addition, our CdTe solar modules provide a superior spectral response in humid environments where atmospheric moisture alters the solar spectrum relative to laboratory standards. Our CdTe solar modules also provide a better shading response than conventional crystalline silicon solar modules, which may lose up to three times as much power as CdTe solar modules when shading occurs. As a result of these factors, our PV solar power systems typically produce more annual energy in real world field conditions than competing systems with the same nameplate capacity.
- Our modules are manufactured in a high-throughput, automated environment that integrates all manufacturing steps into a continuous flow line. At the outset, a sheet of glass enters the production line and in less than 3.5 hours is transformed into a completed module, which is flash tested, boxed, and ready for shipment. With over 17.0 GW of modules sold worldwide, we have a demonstrated history of manufacturing success and innovation. We currently have multiple production lines in our Perrysburg, Ohio and Kulim, Malaysia manufacturing facilities. As we transition to manufacturing our Series 6 module technology, we expect to ramp down production of our Series 4™ ("Series 4") modules over the next two years. This transition process, which will result in a temporary reduction in production capacity, allows us to use our existing manufacturing infrastructure to more quickly deploy our Series 6 module technology to best position us for long-term competitiveness and growth.
- We are vertically integrated across substantially the entire solar value chain. Many of the efficiencies, cost reductions, and capabilities that we deliver to our customers are not easily replicable for other industry participants that are not similarly vertically integrated. Accordingly, our operational model offers PV solar energy solutions that benefit from our capabilities, including: advanced PV modules; project development; engineering and plant optimization; grid integration and plant control systems; procurement and construction consulting; and O&M services.
- Our systems deliver solar energy that is cost competitive with certain conventional energy sources, depending on the location and application. Our solutions diversify the energy portfolio and reduce the risk of fuel-price volatility, while delivering an LCOE that is cost competitive in many circumstances with electricity generated from fossil fuels. With the absence of commodity price risk, solar energy has a meaningful value proposition, including a long-term fixed price with relatively low operating costs and reliable energy. When compared to the price of power derived from a conventional source of energy, a fixed price cannot be achieved unless the cost of hedging is included. Hedging costs of a commodity such as natural gas, along with the costs of credit support required for a long-term hedge, can significantly increase conventional energy costs.

- We lead all PV solar module manufacturers in R&D investment, maintaining a rate of innovation enabling efficiency gains three times faster than multi-crystalline silicon technology (historically our primary competitor) over recent years. Our R&D model differentiates us from much of our competition due to its vertical integration, from advanced research to product development, manufacturing, and applications. Our module conversion efficiency has improved on average more than half a percent every year for the last ten years. We currently hold two world records for CdTe PV efficiency, achieving an independently certified research cell efficiency of 22.1% and a full area module efficiency of 18.2%. Our module R&D efforts generally focus on continually improving the efficiency and energy yield of our modules and otherwise driving improvements in the lifetime energy production of our modules for cost effective, productive, and reliable PV solar power systems.
- Our bankability and financial credibility enable us to offer meaningful module and system warranties after installation, which provide us with a competitive advantage relative to some of our peers in the solar sector in the context of project financing.
- We have developed advanced grid integration technology, which provides PV plants the ability to actively stabilize the electricity grid and operate more like traditional electricity generation plants. Advanced plant features of our grid integration systems include the ability to regulate voltage, curtail active power when necessary, limit the rate of change of power, prevent trips during faults and disturbances, and react to changes in grid frequency.
- O&M is a key driver for power plants to deliver on their projected revenues. By leveraging our extensive experience in plant optimization and advanced diagnostics, we have developed one of the largest and most advanced O&M programs in the industry. With more than 7.1 GW DC of utility-scale PV plants under the O&M program, we maintain a fleet average system effective availability greater than 99%. Our experienced O&M staff enhances the probability that our customers' power plants produce the energy predicted in their energy model. Our products and services are engineered to maximize energy output and revenue for our customers while significantly reducing their unplanned maintenance costs. Plant owners benefit from predictable expenses over the life of the contract and reduced risk of energy loss. Our goal is to optimize our customers' power plants to generate the maximum amount of energy and revenue under their respective power purchase agreements ("PPA") throughout the operational life of the plants. We have made significant investments in O&M technologies in order to develop and create a scalable and sustainable O&M platform. Our O&M program is compliant with the North American Electric Reliability Corporation ("NERC") standards and is designed to be scalable to accommodate the growing O&M needs of customers worldwide. We believe our O&M expertise and scale are significant differentiators, as it is difficult for many competitors to replicate this experience.

Sustainable Growth

Our long term strategic plan is a long-term roadmap to achieve our technology, cost leadership, and growth objectives. In executing our long term strategic plan, we are focusing on providing utility-scale PV solar energy solutions using our modules in key geographic markets that we believe have a compelling need for mass-scale PV electricity, including markets throughout the Americas, the Asia-Pacific region, and the Middle East. As part of our long term strategic plan, we are focusing on opportunities in which our PV solar energy solutions can compete directly with fossil fuel offerings on an LCOE or similar basis, or complement such fossil fuel electricity offerings. Execution of the long term strategic plan entails a prioritization of market opportunities worldwide relative to our core strengths and a corresponding allocation of resources around the globe. This prioritization involves a focus on our core module and utility-scale offerings and exists within a current market environment that includes rooftop and distributed generation solar, particularly in the United States. While it is

unclear how rooftop and distributed generation solar might impact our core utility-scale offerings in the next several years, we believe that utility-scale solar will continue to be a compelling solar offering for companies with technology and cost leadership and will continue to represent an increasing portion of the overall electricity generation mix.

We are closely evaluating and managing the appropriate level of resources required as we pursue the most advantageous and cost effective projects and partnerships in our target markets. We have dedicated, and intend to continue to dedicate, significant capital and human resources to reduce the total installed cost of PV solar energy, to optimize the design and logistics around our PV solar energy solutions, and to ensure that our solutions integrate well into the overall electricity ecosystem of each specific market. We expect that, over time, an increasing portion of our consolidated net sales, operating income, and cash flows may come from solar offerings in the key geographic markets described above as we execute on our long term strategic plan. The timing, execution, and financial impacts of our long term strategic plan are subject to risks and uncertainties, as described in Item 1A. ''Risk Factors.'' We are focusing our resources in those markets and energy applications in which solar power can be a least-cost, best-fit energy solution, particularly in regions with high solar resources, significant current or projected electricity demand, and/or relatively high existing electricity prices. As part of these efforts, we continue to optimize resources globally, including business development, sales personnel, and other professional staff supporting target markets.

Joint ventures or other strategic arrangements with partners are a key part of our long term strategic plan, and we generally use such arrangements to expedite our penetration of various key markets and establish relationships with potential customers. We also enter into joint ventures or strategic arrangements with customers or other entities to maximize the value of particular projects. Some of these arrangements involve and are expected in the future to involve significant investments or other allocations of capital. We continue to develop relationships with customers in these strategic markets with a view to creating opportunities for utility-scale PV solar power systems. We sell such systems directly to end customers, including utilities, independent power producers, commercial and industrial companies, and other system owners. Depending on the market opportunity, our sales offerings may range from module-only sales, to module sales with a range of development, EPC services, and other solutions, to full turn-key PV solar power system sales. We expect these offerings to continue to evolve over time as we work with our customers to optimize how our PV solar energy solutions can best meet our customers' energy and economic needs.

Financial Viability

First Solar's commitment is to create long-term shareholder value and generate returns on invested capital in excess of its weighted average cost of capital over that time horizon. Despite substantial downward pressure on the price of solar modules due to pricing competition and significant capacity in the industry, we have continued to deliver strong financial performance and liquidity. As planned, we expect to continue to drive operating expense efficiencies and improvements while still investing in growth, the continued development of our global sales capabilities, and our R&D roadmap. We seek to balance our incentive compensation and decision-making processes to ensure we direct our efforts and investments towards long-term profitable and sustainable growth with appropriate returns on invested capital and reinvest excess returns back into the business.

Offerings and Capabilities

Offerings

We are focusing on markets and energy applications in which solar power can be a least-cost, best-fit energy solution, particularly in regions with high solar resources, significant current or projected electricity demand, and/or relatively high existing electricity prices. We differentiate our product

offerings by geographic market and localize the solution, as needed. Our consultative approach to our customers' solar energy needs and capabilities results in customized solutions to meet their economic goals. We have designed our customer solutions according to the needs of the following different business areas. Although we have substantial experience with the advanced PV module and utility-scale power plant offerings described below, certain other offerings are in various stages of development.

- *PV Modules.* Our modules couple leading-edge CdTe technology with the manufacturing excellence and quality control that comes from being one of the world's most experienced producers of advanced PV modules. Our technology demonstrates a proven performance advantage over most crystalline silicon solar modules of equivalent efficiency rating by delivering competitive efficiency, higher real-world energy yield, and long-term reliability. We are able to provide such product performance, quality, and reliability to our customers due, in large part, to investing more in R&D than any other solar company in the world.
- *Utility-Scale Power Plant.* We have extensive, proven experience in delivering reliable grid-connected bulk power systems for utility-scale generation. Our grid-connected PV solar power systems diversify the energy portfolio, reduce fossil-fuel consumption, reduce the risk of fuel price volatility, and save costs, proving that centralized solar generation can deliver reliable and affordable solar electricity to the grid in many places around the world. Benefits of our grid-connected bulk power system solutions include reduction of fuel imports and improvements in energy security; diversification of the energy portfolio and reductions of risk related to fuel-price volatility; enhanced peaking generation and faster time-to-power; improved grid reliability and stability with advanced PV plant controls; and managed PV variability through accurate forecasting.
- *Commercial and Industrial.* The wholesale commercial and industrial market is a promising opportunity for First Solar given our large-scale PV system expertise. The demand for corporate renewables is accelerating, with corporations worldwide committing to the RE100 campaign, a collaborative, global initiative of influential businesses committed to 100% renewable electricity. We believe we have a competitive advantage in the commercial and industrial market due to customers' sensitivity to reputational risk, as well as their desire to cover their operations globally. With our financial strength, solid development record, and global footprint, we are well positioned to meet their needs. As one recent example, Apple Inc. ("Apple") committed to purchase electricity from our California Flats solar project under construction in Monterey County, California. Apple will receive electricity from 130 MW AC of the project under a 25-year PPA.
- *Community Solar.* Our community solar offering addresses the residential and small business sectors, providing a broad range of customers with access to competitively priced solar energy regardless of the suitability of their rooftops. Community solar utilizes relatively small ground-mounted installations that provide clean energy to utilities, which then offer consumers the ability to buy into a specific community installation and benefit from the solar power generated by that resource. While the initial growth in community solar was limited to certain states, the momentum continues to build as states across the country are beginning to enact community solar policies, and utilities are looking to diversify their energy generation portfolio in order to meet customer demand for affordable, clean energy. Our expertise in utility-scale generation and module technology, paired with the community solar experience of our partner Clean Energy Collective, allows residential power consumers to "go solar," including those who live in apartment buildings or whose home rooftops cannot accommodate solar panels. We continue to work with strategic partners to develop commercially scalable community solar offerings.

Full Suite of Capabilities

Our operational model offers PV solar energy solutions with superior value and less risk with our expertise across substantially the entire solar value chain, including:

- *Project Development.* During project development, we typically obtain land and land rights for the development of PV solar power systems incorporating our modules, negotiate long-term PPAs with potential purchasers of the electricity to be generated by such systems or develop systems in regulated markets where feed-in-tariff ("FiT") or similar structures are in place, manage the interconnection and transmission process, negotiate agreements to interconnect the systems to the electricity grid, and obtain the permits that are required prior to the construction of the systems, including applicable environmental and land-use permits. The sequence of such development activities varies by international location and, in certain locations, may begin by initially bidding for PPA or offtake agreements. We also buy projects in various stages of development and continue developing those projects with system designs incorporating our own modules. We sell developed systems to utilities, independent power producers, commercial and industrial companies, and other system owners, such as investors who are looking for long-term investment vehicles that are expected to generate consistent returns.
- *EPC Services.* We provide EPC services to projects developed by us and other system owners such as utilities, independent power producers and commercial and industrial companies. EPC services include engineering design and related services, BoS procurement, advanced development of grid integration solutions, and construction contracting and management. Depending on the customer and market need, we may provide our full EPC services or any combination of individual products and services within our EPC capabilities. An example of such combination of individual services would be providing engineering design and procurement of BoS parts ("EP" services) for a third-party constructing a PV solar power system. Our vertical integration combined with our partner collaboration enables us to identify and make system-level innovations, which creates further value for our customers.
- *O&M Services.* We have a comprehensive O&M service offering covering more than 7.1 GW DC of utility-scale PV solar power systems. Utilizing a state of the art Global Operations Center, our team of O&M experts provide a variety of services to optimize system performance and comply with PPAs, other agreements, and regulations. We offer our O&M services to solar power plant owners that use either our solar modules or modules manufactured by third-party manufacturers.

Global Markets

We have established and are continuing to develop a business presence on six continents, as described below. Energy markets are by their nature localized, with different drivers and market forces impacting electricity generation and demand in a particular region or for a particular application. Accordingly, our business is evolving worldwide and is shaped by the varying ways in which our PV solar energy solutions can be a compelling and economically viable solution to energy needs in different markets and applications.

The Americas

- *United States.* Multiple PV markets in the United States, which accounted for 83% of our 2016 net sales, exemplify several of the criteria critical for a sustainable solar market: (i) sizeable electricity demand, particularly around growing population centers and industrial areas, (ii) high existing power prices, and (iii) abundant solar resources. In those areas and applications in which these factors are more pronounced, our PV solar energy solutions compete favorably on an economic basis with more traditional forms of energy generation. The market penetration of

PV solar is impacted by certain state and federal support programs, including the current 30% federal investment tax credit, as described under "Support Programs." We have significant experience and a market leadership position in developing, engineering, constructing, and maintaining utility-scale power plants in the United States, particularly in California and other southwestern states, and increasingly in southeastern states. Currently, our solar projects in the United States account for a majority of the advanced-stage pipeline of projects that we are either currently constructing or expect to construct. See Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations—Systems Project Pipeline" for more information about these projects.

- *Other Americas.* We are developing our business in other countries in the Americas including Brazil, Mexico, and certain Central American countries. For example, we recently completed the construction of a 26 MW solar project in Honduras and also commenced construction on an additional 25 MW project in the country.

Europe, the Middle East, and Africa

- *Europe.* While PV solar adoption in the past was driven to a large degree by FiTs and other incentive programs in Germany, France, the United Kingdom ("U.K."), Italy, and Spain, PV solar has entered its next phase in which growth will ultimately be determined by the degree to which PV solar energy solutions can compete economically with more traditional forms of electricity generation, particularly in areas with high prevailing electricity prices, strong electricity demand, and strong solar resources. In particular, Germany, France, and the Netherlands are all running tenders in which utility-scale PV solar projects can bid for capacity. While the declining industry average selling prices for PV solar systems has accelerated the demand for solar energy solutions in some regions, the capacity for utility-scale PV solar in Europe remains limited due to market constraints and government regulations. We have been engaged in business development and module sales activities in France, the U.K., and Germany and are actively evaluating additional sales opportunities in other markets, such as Turkey, where we are collaborating with certain local partners for the distribution of our modules or select project development opportunities.
- *The Middle East.* The market potential for solar energy in the Middle East continues to be driven by a combination of strong economic fundamentals, aggressive tariff pricing, abundant solar resources, and robust policy. The United Arab Emirates ("UAE"), Saudi Arabia, Egypt, and Jordan have established utility-scale solar programs, which are at varying degrees of maturity. The UAE and Jordan lead the region with policy mechanisms designed to ramp up the share of renewable energy in their generation portfolios. Oman, Qatar, and Kuwait are also promising markets with indicators of future potential for solar energy. While there are several motives for investing in solar energy, including energy security, diversification of generation portfolios, and the minimization of domestic consumption of hydrocarbons, the common factor is that the economics of PV solar have made it a compelling choice as a generation source.

  Jordan, the UAE, and Saudi Arabia are actively facilitating the development of the independent power production sector in their countries. For example, Jordan has committed to installing 1.0 GW of PV solar capacity by 2020, while the UAE has tendered over 1.0 GW of independent power production owned utility-scale solar in 2016 alone. Saudi Arabia has also solicited 100 MW of utility-scale solar as part of the inaugural solar independent power production tender, in what is expected to be a 9.5 GW renewable energy program. Across the Arabian Gulf, the region's state-owned hydrocarbon companies continue to be involved in driving regional solar programs. Examples include initiatives spearheaded by Saudi Aramco and the Kuwait Oil Company. However, as with any emerging market, challenges remain, including those related to evolving policy and legislation, infrastructure, the availability of financing, the level of

competition, and geopolitical risk. While energy subsidies also remain a challenge, declining hydrocarbon revenues have led some regional governments, specifically the UAE and Saudi Arabia, to move towards reducing government support for conventional fuels, thereby paving the way for solar to become even more cost competitive.

Since establishing a presence in the Middle East in 2013, First Solar has focused on the region's utility-scale segment while pursuing a range of opportunities. In addition to constructing the 13 MW DC first phase of the Mohammed bin Rashid Al Maktoum Solar Park in Dubai, First Solar also supplied modules for the Park's 200 MW AC second phase. In Jordan, First Solar completed construction of the 53 MW AC Shams Ma'an PV solar power system, which accounts for approximately 1% of Jordan's annual energy output. As a result of these and other projects, First Solar has become a leading provider of PV solutions in the Middle East, with an expected installed capacity of nearly 300 MW AC across the region by the end of 2017.

- *Africa.* Africa offers strong potential for PV solar, which can play a useful role in meeting the region's diversified energy needs. The market's potential revolves around certain established renewable energy programs in countries like Morocco and development-led initiatives in other markets. As the overall African market matures, the engagement of experienced project developers and support from international lenders are expected to further the adoption and growth of utility-scale PV solutions. Our primary focus in Africa is the sale of modules for utility-scale projects. Additionally, we are working with our channel partners, such as Caterpillar Inc., to provide hybrid diesel and/or PV solutions to the distributed generation and commercial and industrial markets.

Asia-Pacific ("APAC") and India

- *Australia.* Australia is a promising region for PV solar. The Australian PV solar market experienced strong growth in 2016, which is expected to continue in 2017. This growth is being driven by an increased demand for PPAs from Australian utilities and large industrial off-takers. In 2016, we redirected our strategy in Australia away from EPC to focus more on utility-scale project development and PV module sales. Moving into 2017, we expect to pursue a robust Australian development pipeline, including self-developed projects in Queensland, New South Wales, and Victoria. In addition to this growing development pipeline, we plan to deliver modules to various third-party developers in Australia in 2017.

- *Japan.* Japan has evolving electricity market characteristics, particularly after the 2011 Fukushima Daiichi nuclear disaster, which make it an attractive market for PV solar. One such characteristic is the announcement of new safety standards following the failure of the Fukushima Daiichi nuclear power station, which resulted in the idling of Japan's nuclear reactors, which had historically generated nearly 30% of the country's electricity. Japan has few domestic fossil fuel resources and relies heavily on fossil fuel imports. Accordingly, the Japanese government has announced a long-term goal of dramatically increasing installed solar power capacity and has provided various incentives for solar power installations. As a result, strong solar demand is expected to continue in Japan over the next several years.

  In 2016, we completed the construction of six solar projects and commenced the construction of three additional projects, including the 59 MW AC solar project we acquired the rights to develop in 2015. We are partnering with local companies to develop, construct, and operate PV solar power systems, which will further mitigate Japan's dependence on nuclear power and fossil fuel imports. Our sales offerings in Japan also include our CdTe modules and O&M services.

- *India.* There is significant potential for PV solar in India due to its growing energy needs, substantial population centers, lack of electrification to many parts of the country, high energy costs, strong irradiance, and aggressive renewable energy targets set by the government, which

include increasing the country's solar capacity to 100 GW by the year 2022. To support this initiative, several key regulations have been announced relating to ramping up renewable purchase obligations, implementing penal provisions for non-compliance with the obligations under the Indian Electricity Act, budgetary allocations under the Central Government for establishing the Green Transmission Corridor, and the creation of numerous solar parks in various states with dedicated transmission infrastructure to be installed by the government. In addition to these measures, the Central Government also introduced the Renewable Generation Obligations, which mandate that all thermal power generators must implement new renewable energy generation capacity to match 10% of their new thermal generation capacity. Overall, these policy and regulatory measures have been introduced with an objective of creating significant and sustained demand for PV solar in India. Accordingly, we are working to sell modules and develop utility-scale PV solar projects in India to address the energy and renewable purchase obligation needs of utilities and target the open access industrial and commercial power demand.

In 2016, we secured rights through a competitive auction to sell power under a 25-year PPA for a cumulative capacity of 60 MW AC to the state owned electricity distribution companies in Karnataka and were in the advanced stages of construction of a 50 MW AC project in Telangana. In 2015, we successfully achieved commercial operation of 130 MW AC of projects in Andhra Pradesh and Telangana. We continue to maintain our strong PV module presence in India with over 1,300 MW DC of installed modules.

- *Other APAC.* We are developing our business in other APAC countries including Indonesia, Malaysia, Thailand, and the Philippines. Each of these regions has one or more market characteristics or trends (such as an environment of declining fuel subsidies in Indonesia) which can make PV solar electricity attractive. In China, we are primarily working through certain of our indirect channel partners to develop sales opportunities in the market.

Support Programs

Although our long term strategic plan provides for First Solar to compete in key markets that do not require solar-specific government subsidies or support programs, in the near term our net sales and profits remain subject to regulation and variability based on the availability and size of government subsidies and economic incentives. Support programs for PV solar electricity generation, depending on the jurisdiction, include FiTs, quotas (including renewable portfolio standards and tendering systems), and net energy metering programs. In addition to these support programs, financial incentives for PV solar electricity generation include tax incentives, grants, loans, rebates, and production incentives. Although we expect to become less impacted by, and less dependent on, support programs as we execute our long term strategic plan, support programs will continue to play varying roles in accelerating the adoption of PV solar systems around the world.

In Europe, renewable energy targets, in conjunction with FiTs, Renewable Obligation Certificates, and other schemes such as tenders for utility-scale PV solar, have contributed to the growth in PV solar markets. Renewable energy targets prescribe how much energy consumption must come from renewable sources, while incentive policies and competitive tender policies are intended to support new supply development by providing certainty to investors. A 2009 European Union ("EU") directive on renewable energy, which replaced an earlier 2001 directive, sets varying targets for all EU member states in support of the directive's goal of a 20% share of energy from renewable sources in the EU by 2020, and requires national action plans that establish clear pathways for the development of renewable energy sources. A renewal of such directive is currently under discussion in Europe.

Tax incentive programs exist in the United States at both the federal and state level and can take the form of investment and production tax credits, accelerated depreciation, and sales and property tax

exemptions and abatements. At the federal level, investment tax credits for business and residential solar systems have gone through several cycles of enactment and expiration since the 1980s. In 2015, the U.S. Congress extended the 30% federal energy investment tax credit ("ITC") for both residential and commercial solar installations through 2019. The credit will step down to 26% in 2020, 22% in 2021, and remain at 10% permanently beginning in 2022. The ITC has been an important economic driver of solar installations in the United States, and its extension is expected to contribute to greater medium-term demand visibility in the United States. The positive impact of the ITC has depended to a large degree on the availability of tax equity for project financing, and any significant reduction in the availability of tax equity in the future could make it more difficult to develop and construct projects requiring financing. The eventual step-down of the ITC to 10% underscores the need for the LCOE from solar systems to continue to decline and remain competitive with other sources of energy generation.

At the federal level, the Environmental Protection Agency's adoption of a final Clean Power Plan Rule (the "Rule") and implementation of the Rule through state plans offered the possibility of increasing the demand for PV solar generating capacity in certain regions of the United States in which PV solar has not historically received significant state-level policy support. However, the adoption and implementation of the Rule has been impacted by litigation against the Rule initiated by states and other stakeholders which has not yet been resolved, and in February 2016, the U.S. Supreme Court stayed implementation of the Rule while such legal challenges are pending. It is therefore premature to assess what the effects of the Rule will be on PV solar markets.

The majority of states in the United States have enacted legislation adopting Renewable Portfolio Standard ("RPS") mechanisms. Under an RPS, regulated utilities and other load serving entities are required to procure a specified percentage of their total retail electricity sales to end-user customers from eligible renewable resources, such as solar generating facilities, by a specified date. Some programs may further require that a specified portion of the total percentage of renewable energy must come from solar generating facilities or other technologies. RPS legislation and implementing regulations vary significantly from state to state, particularly with respect to the percentage of renewable energy required to achieve the state's RPS, the definition of eligible renewable energy resources, and the extent to which renewable energy credits (certificates representing the generation of renewable energy) qualify for RPS compliance. Measured in terms of the volume of renewable electricity required to meet its RPS mandate, California's RPS program is the most significant in the United States, and the California market for renewable energy has dominated the western United States region for the past several years. First enacted in 2002, California's RPS statute has been amended several times to increase the overall percentage requirement as well as to accelerate the target date for program compliance. Pursuant to amendments enacted by the California Legislature in 2015, the California RPS program now requires utilities and other obligated load serving entities to procure 50% of their total retail electricity demand from eligible renewable resources by 2030. In 2016, approximately 45% of our total net sales were derived from our systems projects or third-party module sales to solar power systems in California.

The current U.S. administration's proposed and contemplated environmental and tax policies may create regulatory uncertainty in the renewable energy sector, including the solar energy sector, and may lead to a reduction or removal of various clean energy programs and initiatives designed to curtail climate change. For more information about the risks associated with these potential government actions, see Item 1A. "Risk Factors—The reduction, elimination, or expiration of government subsidies, economic incentives, tax incentives, renewable energy targets, and other support for on-grid solar electricity applications, or other adverse public policies, could reduce demand and/or price levels for our solar modules and systems and limit our growth or lead to a reduction in our net sales, thereby adversely impacting our operating results."

Business Segments

We operate our business in two segments. Our components segment involves the design, manufacture, and sale of CdTe solar modules, which convert sunlight into electricity. Third-party customers of our components segment include integrators and operators of PV solar power systems. Our second segment is our fully integrated systems business (“systems segment”), through which we provide complete turn-key PV solar power systems, or solar solutions, that draw upon our capabilities, which include (i) project development, (ii) EPC services, and (iii) O&M services, as described in more detail below. We may provide our full EPC services or any combination of individual products and services within our EPC capabilities depending upon the customer and market opportunity. All of our systems segment products and services are for PV solar power systems, which primarily use our solar modules, and we sell such products and services to utilities, independent power producers, commercial and industrial companies, and other system owners. Additionally, within our systems segment we may temporarily own and operate, or retain interests in, certain of our PV solar power systems for a period of time based on strategic opportunities.

See Note 23 “Segment and Geographical Information” to our consolidated financial statements for the year ended December 31, 2016 included in this Annual Report on Form 10-K for further information on our business segments.

Components Business

Our components business involves the design, manufacture, and sale of CdTe solar modules which convert sunlight into electricity.

Solar Modules

Our flagship module since the inception of First Solar has been manufactured using our advanced CdTe thin-film technology. Each Series 4 solar module is a glass laminate approximately 2ft $\times$ 4ft (60cm $\times$ 120cm) in size that encapsulates a CdTe thin-film semiconductor. Our solar modules had an average rated power per module of approximately 114 watts, 107 watts, and 95 watts for 2016, 2015, and 2014, respectively. Our Series 4 module, which offers up to 10% more energy than conventional crystalline silicon modules with the same efficiency rating in certain geographic markets, is compatible with advanced 1500-volt plant architectures. Our Series 4A™ module variant features anti-reflective coated glass, which further enhances energy production. Our semiconductor structure is a single-junction polycrystalline thin-film that uses CdTe as the absorption layer. CdTe has absorption properties that are well matched to the solar spectrum and can deliver competitive conversion efficiencies using approximately 1-2% of the amount of semiconductor material that is used to manufacture traditional crystalline silicon solar modules. One of the drivers of First Solar modules’ performance advantage over traditional crystalline silicon modules is a lower temperature coefficient of peak power, delivering higher energy yields at elevated operating temperatures typical of utility-scale solar power plants in sunny regions.

We recently announced plans for the introduction of our Series 6 solar module, which will be over two square meters in active area. Series 6 modules will be manufactured using the same materials and processes as our legacy module technologies, which have been proven in high volume production and have been in the field for over a decade. In 2016, we also elected to reallocate our previous crystalline silicon module production capacity to support next generation CdTe module offerings. As a result, we ended production of our crystalline silicon modules to focus on our core CdTe module technology.

Manufacturing Process

We manufacture our CdTe solar modules on high-throughput integrated production lines in an automated, proprietary, and continuous process. Our solar modules employ a thin layer of semiconductor material to convert sunlight into electricity. Our manufacturing process eliminates the multiple supply chain operators and expensive and time-consuming batch processing steps that are used to produce crystalline silicon solar modules. We manufacture solar modules at our Perrysburg, Ohio and Kulim, Malaysia manufacturing facilities. As we transition to manufacturing our Series 6 module technology, we expect to ramp down production of our Series 4 related modules over the next two years. Such temporary reduction in production capacity allows us to use our existing manufacturing infrastructure to more quickly deploy our Series 6 module technology to best position us for long-term competitiveness and growth.

We have integrated our CdTe manufacturing processes into a continuous production line with the following three stages: the deposition stage, the cell definition and treatment stage, and the assembly and test stage. In the deposition stage, panels of transparent oxide-coated glass are robotically loaded onto the production line where they are cleaned, laser etch identified with a serial number, heated, and coated with thin layers of CdTe and other semiconductor materials using our proprietary vapor transport deposition technology, after which the semiconductor-coated plates are cooled rapidly to increase glass strength. In the cell definition and treatment stage, we use high speed lasers to transform the large single semiconductor coating on the glass plate into a series of interconnected cells that deliver the desired current and voltage output. In this stage, we also treat the semiconductor film using proprietary chemistries and processes to improve the device performance, and we apply a metal sputtered back contact. Finally, in the assembly and test stage, we apply busbars, inter-layer material, and a rear glass cover sheet that is laminated to encapsulate the device. A junction box and termination wires are then applied to complete the assembly. The final assembly stage is the only stage in our production line that requires manual processing.

We maintain a robust quality and reliability assurance program that monitors critical process parameters and measures product performance to ensure that industry and more stringent internal standards are met. Acceptance testing for electrical leakage, visual quality, and power measurement on a solar simulator are conducted prior to a module being boxed for shipment. The quality and reliability tests complement production surveillance with an ongoing monitoring program, subjecting production modules to accelerated life stress testing to help ensure ongoing conformance to requirements of the International Electrotechnical Commission and Underwriters Laboratories Inc. These programs help assure delivery of power and performance in the field with a high level of product quality and reliability.

Research, Development, and Engineering

We continue to devote substantial resources to R&D with the primary objective of lowering the lifecycle cost of electricity generated by our PV solar power systems. We conduct our R&D activities primarily in the United States. Within our components business, we focus our R&D activities on, among other areas, continuing to increase the conversion efficiency and energy yield of our solar modules and continuously improving module durability and manufacturing efficiencies, including throughput improvement, volume ramp, and material cost reduction.

In the course of our R&D activities, we continuously explore technologies in our efforts to sustain competitive differentiation in our modules. We typically qualify process and product improvements for full production at our Perrysburg, Ohio plant and then use a systematic process to propagate them to our other production lines. We believe that our systematic approach to technology change management provides continuous improvements and ensures uniform adoption across our production lines. In addition, our CdTe production lines are replicas or near replicas of each other and, as a result, a process or production improvement on one line can be rapidly and reliably deployed to other production lines.

We regularly produce research cells in our laboratories, some of which are tested for performance and certified by independent labs such as the National Renewable Energy Laboratory. Cell efficiency measures the proportion of light converted in a single solar cell at standard test conditions. Our research cells are produced using laboratory equipment and methods and are not intended to be representative of our manufacturing capability. We believe that our record cells demonstrate a potential long-term module efficiency entitlement of over 19% using our commercial-scale manufacturing equipment.

For information regarding our research and development expense for the years ended December 31, 2016, 2015, and 2014, See Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations—Results of Operations."

Customers

With respect to our components business, during 2016 we sold the majority of our solar modules (not included in our systems projects) to integrators and operators of systems in India, the United States, and the UAE. Third-party module sales represented approximately 23% of our total 2016 net sales. Additionally, we develop, design, construct, and sell PV solar power systems that use the solar modules we manufacture.

During 2016, Southern Power Company and NextEra Energy, Inc. each accounted for more than 10% of our components segment's net sales, which includes the solar modules used in our systems projects. We are investing in key geographic markets, particularly in areas with abundant solar resources and sizable electricity demand, and as part of such efforts, we are seeking to develop additional customer relationships, which has reduced and is expected to continue to reduce our customer and geographic concentration and dependence.

Competition

The renewable energy, solar energy, and solar module sectors are highly competitive and continually evolving as participants in these sectors strive to distinguish themselves within their markets and compete within the larger electric power industry. We face intense competition for sales of solar modules, which has resulted in and may continue to result in reduced margins and loss of market share. With respect to our components business, our primary sources of competition are crystalline silicon solar module manufacturers, as well as other thin-film module manufacturers. We believe many crystalline silicon module manufacturers are currently transitioning from multi-crystalline wafer technology (historically our primary competitor) to more efficient mono-crystalline wafer technology. Such transition is being facilitated by the emergence of new and low cost mono wafer suppliers, primarily from China, coupled with the gradual industry transition to Passivated Emitter Rear Contact ("PERC") cell technology. As a result, we expect that in the future, our primary competition might transition from multi-crystalline to mono-crystalline PERC with higher conversion efficiencies.

Certain of our existing or future competitors may be part of larger corporations that have greater financial resources and greater brand name recognition than we do and, as a result, may be better positioned to adapt to changes in the industry or the economy as a whole. Certain competitors may have direct or indirect access to sovereign capital, which could enable such competitors to operate at minimal or negative operating margins for sustained periods of time. Among PV solar module manufacturers, the principal methods of competition include sales price per watt, conversion efficiency, energy yield, reliability, warranty terms, and customer payment terms. If competitors reduce module pricing to levels near or below their manufacturing costs, or are able to operate at minimal or negative operating margins for sustained periods of time, our results of operations could be adversely affected. At December 31, 2016, the global PV industry consisted of more than 50 manufacturers of solar modules. In the aggregate, these manufacturers have significant installed production capacity, relative

to global demand, and the ability for additional capacity expansion. We believe the solar industry may from time to time experience periods of structural imbalance between supply and demand (i.e., where production capacity exceeds global demand), and that such periods will put pressure on pricing, which could adversely affect our results of operations. We believe the solar industry is currently in such a period.

In addition, we expect to compete with future entrants into the PV solar industry that offer new technological solutions. We also face competition from semiconductor manufacturers and semiconductor equipment manufacturers or their customers that produce PV solar cells, solar modules, or turn-key production lines. We also compete with companies that currently offer or are developing other renewable energy technologies (including wind, hydropower, geothermal, biomass, and tidal technologies) and other power generation sources that employ conventional fossil fuels.

Raw Materials

Our CdTe module manufacturing process uses approximately 30 types of raw materials and components to construct a complete solar module. One critical raw material in our production process is CdTe. Of the other raw materials and components, the following are also critical to our manufacturing process: front glass coated with transparent conductive oxide, other semiconductor materials, organics such as photo resist, tempered back glass, packaging components such as interlayer, cord plate/cord plate cap, junction box, lead wire, and solar connectors. Before we use these materials and components in our manufacturing process, a supplier must undergo a rigorous qualification process. We continually evaluate new suppliers and currently are qualifying several new suppliers and materials. When possible, we attempt to use suppliers that can provide a raw material supply source that is near our manufacturing locations, reducing the cost and lead times for such materials. Several of our key raw materials and components are either single-sourced or sourced from a limited number of third-party suppliers.

CdTe Solar Module Collection and Recycling Program

We are committed to extended producer responsibility and take into account the environmental impact of our products over their entire life cycle. As part of such efforts, we established the solar industry's first comprehensive module collection and recycling program. Our module recycling process is designed to enable the recovery of valuable materials, including the glass and encapsulated semiconductor material, for use in new modules or other products and minimizes the environmental impacts associated with our modules at the end of their useful lives. Approximately 90% of each collected First Solar module can be recycled into materials for reuse. For customer sales contracts that include modules covered under this program, we agree to pay the costs for the collection and recycling of qualifying solar modules, and the end-users agree to notify us, disassemble their solar power systems, package the solar modules for shipment, and revert ownership rights over the modules back to us at the end of the modules' service lives.

The European Union's Waste Electronics and Electrical Equipment ("WEEE") Directive places the obligation of recycling (including collection, treatment, and environmentally sound disposal) of electrical and electronic equipment products upon producers, and such directive is applicable to PV solar modules in EU member states. For modules covered under our program that were previously sold into and installed in the EU, we continue to maintain a commitment to cover the estimated collection and recycling costs consistent with our historical program. In addition, as a result of the transposition of the WEEE Directive by the EU member states, we have adjusted our offerings, as required, in various EU member states to ensure compliance with specific EU member state WEEE regulations.

In addition to achieving substantial environmental benefits, our solar module collection and recycling program may provide us the opportunity to recover certain raw materials and components for reuse in our manufacturing process. We currently have recycling facilities operating at each of our current manufacturing facilities in the United States and Malaysia and at our former manufacturing facility location in Germany that produce glass cullet suitable for use in the production of new glass products by a third-party supplier and unrefined semiconductor materials that are further processed by a third-party supplier and then used to produce semiconductor materials for use in new solar modules.

Solar Module Warranties

We provide a limited PV solar module warranty covering defects in materials and workmanship under normal use and service conditions for generally 10 years. We also typically warrant that modules installed in accordance with agreed-upon specifications will produce at least 97% of their labeled power output rating during the first year, with the warranty coverage reducing by 0.7% every year thereafter throughout the 25-year performance warranty period. In resolving claims under both the limited defect and power output warranties, we typically have the option of either repairing or replacing the covered modules or, under the limited power output warranty, providing additional modules to remedy the power shortfall. We also have the option to make a payment for the then-current market price of modules to resolve the claims. Such limited module warranties are standard for module sales and may be transferred from the original purchasers of the solar modules to subsequent purchasers upon resale.

As an alternative form of our standard limited module power output warranty, we also offer an aggregated or system-level limited module performance warranty. This system-level limited module performance warranty is designed for utility-scale systems and provides 25-year system-level energy degradation protection. In addition, this warranty represents a practical expedient to address the challenge of identifying, from the potential millions of modules installed in a utility-scale system, individual modules that may be performing below warranty thresholds by focusing on the aggregate energy generated by the system rather than the power output of individual modules. The system-level limited module performance warranty typically is calculated as a percentage of a system's expected energy production, adjusted for certain actual site conditions, with the warranted level of performance declining each year in a linear fashion, but never falling below 80% during the term of the warranty. In resolving claims under the system-level limited module performance warranty to restore the system to warranted performance levels, we first must validate that the root cause of the issue is due to module performance; we then have the option of either repairing or replacing the covered modules, providing supplemental modules, or making a cash payment. Consistent with our limited module power output warranty, when we elect to satisfy a warranty claim by providing replacement or supplemental modules under the system-level module performance warranty, we do not have any obligation to pay for the labor to remove or install modules.

In December 2016, we introduced an update to the limited module warranties to be offered on future sales of our PV solar modules. Under the update to the limited module power output warranty, we will warrant that modules installed in accordance with agreed-upon specifications will produce at least 98% of their labeled power output rating during the first year, with the warranty coverage reducing by 0.5% every year thereafter throughout the 25-year performance warranty period. Our limited module warranties will also include an option for us to remedy claims under such warranties, generally exercisable only after the second year of the warranty period, by making certain cash payments. Under the update to the limited workmanship warranty, the optional cash payment will be equal to the original purchase price of the module, reduced by a degradation factor, and under the update to the limited power output warranty, the cash payment will be equal to the shortfall in power output.

Systems Business

Through our fully integrated systems business, we provide complete turn-key PV solar power systems, or solar solutions, which may include project development, EPC services, and/or O&M services.

Project Development

Project development activities include: site selection and securing rights to acquire or use the site, obtaining the requisite interconnection and transmission studies, executing an interconnection agreement, obtaining environmental and land-use permits, maintaining effective site control, and entering into a PPA with an off-taker of the power to be generated by the project. These activities culminate in receiving the right to construct and operate a PV solar power system. Depending on the market opportunity or geographic location, we may acquire projects in various stages of development or acquire project companies from developers in order to complete the development process, construct a system incorporating our modules, and sell the system to a long-term owner. We may also collaborate with local partners in connection with these project development activities. Depending on the type of project or geographic location, PPAs or FiT structures define the price and terms the utility customer or investor will pay for power produced from the project. Entering into a PPA generally provides the underlying economics needed to finalize development including permitting, beginning construction, arranging financing, and marketing the project for sale to a long-term owner. Depending primarily on the location, stage of development upon our acquisition of the project, and other site attributes, the development cycle typically ranges from one to two years but can be as long as five years. We may be required to incur significant costs for preliminary engineering, permitting, legal, and other expenses before we can determine whether a project is feasible, economically attractive, or capable of being built. If there is a delay in obtaining any required regulatory approvals, we may be forced to incur additional costs, write-down capitalized project assets, and the right of the off-taker under the PPA to terminate may be triggered.

EPC Services

EPC services include engineering design and related services, BoS procurement, advanced development of grid integration solutions, and construction contracting and management. We provide the majority of our EPC services to our self-developed projects intended to be sold; however, we also provide EPC services to other system owners such as utilities, independent power producers, and commercial and industrial companies. Depending on the customer and market need, we may provide our full EPC services or any combination of individual products and services within our EPC capabilities.

For PV solar power systems built by us, we typically provide a limited product warranty on BoS parts for defects in engineering design, installation, and workmanship for a period of one to two years following the substantial completion of a system. In resolving claims under such BoS warranties, we have the option of remedying the defect through repair or replacement.

As part of our systems business, we conduct performance testing of a system prior to substantial completion to confirm the system meets its operational and capacity expectations noted in the EPC agreement. In addition, we may provide an energy performance test during the first or second year of a system's operation. Such a test is designed to demonstrate that the actual energy generation for the applicable year meets or exceeds the modeled energy expectation, after certain adjustments. These adjustments include factors, such as irradiance, weather, module degradation, soiling, curtailment, and other conditions that may affect a system's energy output but are unrelated to the quality, design, or construction.

O&M Services

Our typical O&M service arrangements involve the performance of standard activities associated with operating and maintaining a PV solar power system. We perform such activities pursuant to the scope of services outlined in the underlying contract. These activities are considered necessary to optimize system performance and comply with PPAs, other agreements, and regulations. Although the scope of our services may vary by contract, our O&M service arrangements generally include 24/7 system monitoring, certain PPA and other agreement compliance, NERC compliance, large generator interconnection agreement compliance, energy forecasting, performance engineering analysis, regular performance reporting, turn-key maintenance services including spare parts and corrective maintenance repair, warranty management, and environmental services. As part of our O&M services, we also typically provide an effective availability guarantee, which stipulates that a system will be available to generate a certain percentage of total possible energy during a specific period after adjusting for factors outside of our control as the service provider, such as weather, curtailment, outages, force majeure, and other conditions that may affect system availability.

Customers

With respect to our systems business, our customers consist of utilities, independent power producers, commercial and industrial companies, and other system owners. These customers may purchase completed PV solar power systems, which include our solar modules, or any combination of development, EPC services, and/or O&M services. During 2016, the substantial majority of our systems business sales were in North America, and the principal customers of our systems business were Southern Power Company; NextEra Energy, Inc.; and Recurrent Energy, LLC, each of which also accounted for more than 10% of the segment's net sales.

Competition

With respect to our systems business, we face competition from other providers of renewable energy solutions, including developers of PV solar power systems and developers of other forms of renewable energy projects, such as wind, hydropower, geothermal, biomass, and tidal projects. To the extent other solar module manufacturers become more vertically integrated, we expect to face increased competition from such companies as well. We also face competition from other EPC companies and joint venture type arrangements between EPC companies and solar companies. Certain current or potential future competitors may also have a low cost of capital and/or access to foreign capital. While the decline in PV module prices over the last several years has increased interest in solar electricity worldwide, there are limited barriers to entry in many parts of the PV solar value chain, depending on the geographic market. Accordingly, competition at the system level can be intense, thereby exerting downward pressure on system-level profit margins industry-wide, to the extent competitors are willing and able to bid aggressively low prices for new projects and PPAs, using low cost assumptions for modules, BoS components, installation, maintenance, and other costs. Please see Item 1A. "Risk Factors—Competition at the system level can be intense, thereby potentially exerting downward pressure on system-level profit margins industry-wide, which could reduce our profitability and adversely affect our results of operations."

Research, Development, and Engineering

Our systems business R&D activities are primarily focused on the objective of lowering the LCOE of a PV solar power system through reductions in BoS costs, improved system design, and energy yield enhancements associated with systems that use our modules. These R&D efforts are also focused on continuing to improve our systems in terms of grid integration and reliability. We conduct our R&D activities for the systems business primarily in the United States. Innovations related to system design, inverters and power converters, hardware platforms and installation techniques, and know-how, among

other things, can and are expected in the future to continue to reduce BoS costs, which can represent a significant portion of the costs associated with the construction of a typical utility-scale PV solar power system.

For information regarding our research and development expense for the years ended December 31, 2016, 2015, and 2014, see Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations—Results of Operations."

Own and Operate

From time to time, we may temporarily own and operate, or retain interests in, certain of our PV solar power systems, often with the intention to sell at a later date. The ability to do so allows us to gain control of the sales process, provide a lower risk profile to a future buyer of a system, and improve our ability to drive higher eventual sale values. As of December 31, 2016, we owned and operated a number of systems in various geographic markets, including Chile, India, and the United States. As an owner and operator for certain of these systems, we may be subject to the authority of the Federal Energy Regulatory Commission ("FERC"), as well as various other local, state, and federal regulatory bodies. For more information about risks related to owning and operating such systems, please see Item 1A. "Risk Factors—As an owner and operator of PV solar power systems that deliver electricity to the grid, certain of our affiliated entities may be regulated as public utilities under U.S. federal and state law, which could adversely affect the cost of doing business and limit our growth." For more information about the economics of such ownership and the impacts on our liquidity see Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations—Liquidity and Capital Resources."

Intellectual Property

Our success depends, in part, on our ability to maintain and protect our proprietary technology and to conduct our business without infringing on the proprietary rights of others. We rely primarily on a combination of patents, trademarks, and trade secrets, as well as associate and third-party confidentiality agreements, to safeguard our intellectual property. We regularly file patent applications to protect inventions arising from our R&D activities and are currently pursuing patent applications in the United States and other countries. Our patent applications and any future patent applications might not result in a patent being issued with the scope of the claims we seek, or at all, and any patents we may receive may be challenged, invalidated, or declared unenforceable. In addition, we have registered and/or have applied to register trademarks and service marks in the United States and a number of foreign countries for "First Solar" and "First Solar and Design."

With respect to proprietary know-how that is not patentable and processes for which patents are difficult to enforce, we rely on, among other things, trade secret protection and confidentiality agreements to safeguard our interests. We believe that many elements of our PV module manufacturing process, including our unique materials sourcing, involve proprietary know-how, technology, or data that are not covered by patents or patent applications, including technical processes, equipment designs, algorithms, and procedures. We have taken security measures to protect these elements. Our R&D personnel have entered into confidentiality and proprietary information agreements with us. These agreements address intellectual property protection issues and require our associates to assign to us all of the inventions, designs, and technologies they develop during the course of employment with us. We also require our customers and business partners to enter into confidentiality agreements before we disclose sensitive aspects of our modules, technology, or business plans.

We have not been subject to any material intellectual property infringement or misappropriation claims.

Environmental, Health, and Safety Matters

Our operations include the use, handling, storage, transportation, generation, and disposal of hazardous materials and wastes. We are subject to various national, state, local, and international laws and regulations relating to the protection of the environment, including those governing the discharge of pollutants into the air and water; the use, management, and disposal of hazardous materials and wastes; occupational health and safety; and the cleanup of contaminated sites. Therefore, we could incur substantial costs, including cleanup costs, fines, and civil or criminal sanctions and costs arising from third-party property damage or personal injury claims as a result of violations of, or liabilities under, environmental and occupational health and safety laws and regulations or non-compliance with environmental permits required for our operations. We believe we are currently in substantial compliance with applicable environmental and occupational health and safety requirements and do not expect to incur material expenditures for environmental and occupational health and safety controls in the foreseeable future. However, future developments such as the implementation of new, more stringent laws and regulations, more aggressive enforcement policies, or the discovery of unknown environmental conditions may require expenditures that could have a material adverse effect on our business, financial condition, or results of operations. See Item 1A. "Risk Factors—Environmental obligations and liabilities could have a substantial negative impact on our financial condition, cash flows, and results of operations."

Corporate History

In February 2006, we were incorporated as a Delaware corporation. Our common stock has been listed on The NASDAQ Global Select Market under the symbol "FSLR" since our initial public offering in November 2006. In October 2009, our common stock was added to the S&P 500 Index, making First Solar the first, and currently only, pure-play renewable energy company in the index.

Associates

As of December 31, 2016, we had approximately 5,400 associates (our term for full and part-time employees), including approximately 4,100 in our module manufacturing business and approximately 400 associates that work directly in our systems business. The remainder of our associates are in R&D, sales and marketing, and general and administrative positions. None of our associates are currently represented by labor unions or covered by a collective bargaining agreement. As we expand domestically and internationally, we may encounter either regional laws that mandate union representation or associates who desire union representation or a collective bargaining agreement. We believe that our relations with our associates are good.

Information About Geographic Areas

We have significant development, construction, sales, marketing, and manufacturing operations both within and outside the United States. Currently, we manufacture our solar modules at our Perrysburg, Ohio and Kulim, Malaysia manufacturing facilities.

During 2016, the foreign countries with the greatest concentration of customer risk were India and Spain (for a large project located in the UAE), which accounted for a total of 10% of our consolidated net sales. As part of our long term strategic plan, we conduct business in various countries across the world, including countries in the Americas, the Asia-Pacific region, and the Middle East. As a result, we are subject to the legal, tax, political, social, regulatory, and economic conditions of an increasing number of foreign jurisdictions. The international nature of our operations also subjects us to a number of risks, including fluctuations in exchange rates, adverse changes in foreign laws or regulatory requirements, and tariffs, taxes, and other trade restrictions. See Item 1A. "Risk Factors—Our substantial international operations subject us to a number of risks, including unfavorable political, regulatory, labor, and tax conditions in the United States and/or foreign countries" and "Risk

Factors—We may be unable to fully execute on our long term strategic plan, which could have a material adverse effect on our business, financial condition, or results of operations." See Note 23 "Segment and Geographical Information" to our consolidated financial statements included in this Annual Report on Form 10-K for information about our net sales and long-lived assets by geographic region.

Available Information

We maintain a website at www.firstsolar.com. We make available free of charge on our website our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, proxy statements, and any amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act, as soon as reasonably practicable after we electronically file such materials with, or furnish them to, the Securities and Exchange Commission ("SEC"). The information contained in or connected to our website is not incorporated by reference into this report. We use our website as one means of disclosing material non-public information and for complying with our disclosure obligations under the SEC's Regulation FD. Such disclosures will typically be included within the Investor Relations section of our website at investor.firstsolar.com. Accordingly, investors should monitor such portions of our website in addition to following our press releases, SEC filings, and public conference calls and webcasts.

The public may also read and copy any materials that we file with the SEC at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. The public may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. The SEC also maintains a website at www.sec.gov that contains reports and other information regarding issuers, such as First Solar, that file electronically with the SEC.

Executive Officers of the Registrant

Our executive officers and their ages and positions as of February 22, 2017, were as follows:

Name	Age	Position
Mark R. Widmar	51	Chief Executive Officer
Alexander R. Bradley	35	Chief Financial Officer
Georges Antoun	54	Chief Commercial Officer
Philip Tymen deJong	57	Chief Operations Officer
Raffi Garabedian	50	Chief Technology Officer
Paul Kaleta	61	Executive Vice President & General Counsel
Christopher R. Bueter	53	Executive Vice President, Human Resources

Mark R. Widmar was appointed Chief Executive Officer in July 2016. He joined First Solar in April 2011 as Chief Financial Officer and served as First Solar's Chief Accounting Officer from February 2012 through June 2015. Mr. Widmar also serves as a director on the board of the general partner of 8point3 Energy Partners LP, the joint yieldco formed by First Solar and SunPower Corporation in 2015 to own and operate a portfolio of selected solar generation assets. From March 2015 to June 2016, Mr. Widmar served as the Chief Financial Officer of the general partner of 8point3 Energy Partners LP. Prior to joining First Solar, Mr. Widmar served as Chief Financial Officer of GrafTech International Ltd., a leading global manufacturer of advanced carbon and graphite materials, from May 2006 through March 2011. Prior to joining GrafTech, Mr. Widmar served as Corporate Controller of NCR Inc. from 2005 to 2006, and was a Business Unit Chief Financial Officer for NCR from November 2002 to his appointment as Controller. He also served as a Division Controller at Dell, Inc. from August 2000 to November 2002 prior to joining NCR. Mr. Widmar also held various financial and managerial positions with Lucent Technologies Inc., Allied Signal, Inc., and Bristol Myers/Squibb, Inc. He began his career in 1987 as an accountant with Ernst & Young. Mr. Widmar holds a Bachelor of Science in Business Accounting and a Masters of Business Administration from Indiana University.

Alexander R. Bradley was appointed interim Chief Financial Officer in July 2016 and confirmed as Chief Financial Officer in October 2016. Mr. Bradley previously served as Vice President, Treasury and Project Finance for First Solar. Mr. Bradley also serves as a director on the board for the general partner of 8point3 Energy Partners LP. From June 2015 to June 2016, Mr. Bradley served as a vice president of operations of the general partner of 8point3 Energy Partners LP. Mr. Bradley has led or supported the structuring, sale, and financing of over $10 billion and approximately 2.7 GW of the Company's worldwide development assets, including several of the largest PV power plant projects in North America. Mr. Bradley's professional experience includes more than 10 years in investment banking, mergers and acquisitions, project finance, and business development in the United States and internationally. Prior to joining the Company in May 2008, Mr. Bradley worked at HSBC in investment banking and leveraged finance, in London and New York, covering the energy and utilities sector. He received his Master of Arts from the University of Edinburgh, Scotland.

Georges Antoun was appointed Chief Commercial Officer in July 2016. He joined First Solar in July 2012 as Chief Operating Officer before being appointed as President, U.S. in July 2015. Mr. Antoun has over 20 years of operational and technical experience, including leadership positions at several global technology companies. Prior to joining First Solar, Mr. Antoun served as Venture Partner at Technology Crossover Ventures ("TCV"), a private equity and venture firm that he joined in July 2011. Before joining TCV, Mr. Antoun was the Head of Product Area IP & Broadband Networks for Ericsson, based in San Jose, California. Mr. Antoun joined Ericsson in 2007, when Ericsson acquired Redback Networks, a telecommunications equipment company, where Mr. Antoun served as the Senior Vice President of World Wide Sales & Operations. After the acquisition, Mr. Antoun was promoted to Chief Executive Officer of the Redback Networks subsidiary. Prior to Redback Networks, Mr. Antoun spent five years at Cisco Systems, where he served as Vice President of Worldwide Systems Engineering and Field Marketing, Vice President of Worldwide Optical Operations, and Vice President of Carrier Sales. He has also held senior management positions at Newbridge Networks, a data and voice networking company, and Nynex (now Verizon Communications), where he was part of its Science and Technology Division. Mr. Antoun is a member of the board of directors of Ruckus Wireless, Inc. and Violin Memory, Inc., both publicly-traded companies. Mr. Antoun earned a Bachelor of Science degree in Engineering from the University of Louisiana at Lafayette and a Master's degree in Information Systems Engineering from NYU Poly.

Philip Tymen deJong was appointed Chief Operating Officer in July 2015. Mr. deJong has comprehensive leadership responsibility for areas including manufacturing, EPC, quality and reliability, supply chain, and product management. Mr. deJong joined First Solar in January 2010 as Vice President, Plant Management and served in several Senior Vice President roles in manufacturing and operations prior to being appointed Senior Vice President, Manufacturing & EPC in January 2015. Prior to joining First Solar, Mr. deJong was Vice President of Assembly/Test Manufacturing for Numonyx Corporation. Prior to that, he worked for 25 years at Intel Corporation, holding various positions in engineering, manufacturing, wafer fabrication management, and assembly/test manufacturing. Mr. deJong holds a Bachelor of Science degree in Industrial Engineering/Mechanical Engineering from Oregon State University and has completed advanced study at the University of New Mexico Anderson School of Management.

Raffi Garabedian has been the Chief Technology Officer of First Solar, Inc. since May 2012 and manages the Company's technology, PV module, and power plant system products and roadmaps. Mr. Garabedian joined First Solar in June 2008 as Director of Disruptive Technologies. Prior to First Solar, Mr. Garabedian spent over 15 years in the MEMS (micro-electro-mechanical systems) industry, developing new products ranging from automotive engine control sensors to fiber optic telecommunications switching systems. He was the founding CEO of Touchdown Technologies, Inc., which was acquired by Verigy, as well as Micromachines Inc., which was acquired by Kavlico. Mr. Garabedian is named on approximately 28 issued U.S. patents. Mr. Garabedian earned a Bachelor of Science degree in Electrical Engineering from Rensselaer Polytechnic Institute and a Master of Science degree in Electrical Engineering with a focus on semiconductor and microsystems technology from the University of California Davis.

Paul Kaleta joined First Solar in March 2014 as Executive Vice President & General Counsel. Prior to joining First Solar, Mr. Kaleta was Executive Vice President, General Counsel, Shared Services & Secretary, and Chief Compliance Officer for NV Energy, Inc., which was acquired by Berkshire Hathaway's Energy Group in December 2013. Before that, he was Vice President and General Counsel for Koch Industries, Inc., one of the world's largest privately held companies with diverse businesses worldwide, including refining, petrochemicals, and commodity trading, among others. He also served in a number of legal and other leadership roles for Koch companies. Before joining Koch, he was Vice President and General Counsel of Niagara Mohawk Power Corporation (now part of National Grid). In private practice, Mr. Kaleta was an equity partner in the Washington D.C. law firm Swidler Berlin LLP and an associate in the Washington D.C. office of Skadden, Arps, Slate, Meagher & Flom LLP. He also served as a federal judicial clerk. Mr. Kaleta is the founding chair of the Southern Nevada Chapter of the "I Have a Dream Foundation" (now "Core Academy-powered by The Rogers Foundation"), a member of the Client Advisory Council of Lex Mundi, and has taught both energy law and business ethics and leadership, as an adjunct professor, among other professional and community activities. Mr. Kaleta holds a juris doctor degree from Georgetown University Law Center and a bachelor's degree from Hamilton College.

Christopher R. Bueter was appointed Executive Vice President, Human Resources in February 2016. Mr. Bueter joined First Solar in November 2009 as Global Director for Industrial Relations and also served as Vice President, Human Resources Global Business Development and Corporate Services, Vice President, Global Human Resources and Labor Relations, and Senior Vice President, Human Resources. Prior to joining First Solar, Mr. Bueter served as the Vice President of Global Employee Relations at Dana Corporation, an American-based worldwide supplier of powertrain components. In his 24 years at Dana Corporation, he served in a variety of roles, including Corporate Director of Employee Relations and Distribution Services Division Human Resources Manager. Mr. Bueter holds a Bachelor of Science in human resources management from the University of Toledo, and a juris doctor degree from the University of Toledo Law School.

Item 1A. ***Risk Factors***

An investment in our stock involves a high degree of risk. You should carefully consider the following information, together with the other information in this Annual Report on Form 10-K, before buying shares of our stock. If any of the following risks or uncertainties occur, our business, financial condition, and results of operations could be materially and adversely affected and the trading price of our stock could decline.

Risks Related to Our Markets and Customers

Competition in solar markets globally and across the solar value chain is intense, and could remain that way for an extended period of time. An increased global supply of PV modules has caused and may continue to cause structural imbalances in which global PV module supply exceeds demand, which could have a material adverse effect on our business, financial condition, and results of operations.

In the aggregate, we believe manufacturers of solar modules and cells have significant installed production capacity, relative to global demand, and the ability for additional capacity expansion. For example, we estimate that in 2016, over 20 GW of capacity was added by solar module manufacturers, particularly but not exclusively in Asia. We believe the solar industry may from time to time experience periods of structural imbalance between supply and demand (i.e., where production capacity exceeds global demand), and that such periods will put intense pressure on pricing. We believe the solar industry is currently in such a period. During the past several years, industry average sales prices per watt ("ASPs") have declined, at times significantly, both at the module and system levels, as competitors have reduced ASPs to sell-through inventories worldwide. In the U.S., for example, we believe that declines in ASPs have resulted, in substantial part, from solar module manufacturers

undertaking actions to circumvent existing tariffs and duty structures. In addition, we believe that lower demand in the Chinese market, such as we believe occurred in the second half of 2016, was a key catalyst to the most recent decline in ASPs. There may be additional pressure on global demand and ASPs in the future resulting from fluctuating demand in certain major solar markets such as China. If our competitors reduce module pricing to levels near or below their manufacturing costs, or are able to operate at minimal or negative operating margins for sustained periods of time, or if demand for PV modules does not grow sufficiently to justify the current production supply, our business, financial condition, and results of operations could be adversely affected.

If PV and related technologies are not suitable for widespread adoption at economically attractive rates of return or if sufficient additional demand for solar modules, related technologies, and systems does not develop or takes longer to develop than we anticipate, our net sales and profit may flatten or decline and we may be unable to sustain profitability.

In comparison to fossil fuel-based electricity generation, the solar energy market continues to be at a relatively early stage of development. If utility-scale PV technology proves unsuitable for widespread adoption at economically attractive rates of return or if additional demand for solar modules and systems fails to develop sufficiently or takes longer to develop than we anticipate, we may be unable to grow our business or generate sufficient net sales to sustain profitability. In addition, demand for solar modules, related technologies, and systems in our targeted markets may develop to a lesser extent than we anticipate. Many factors may affect the viability of widespread adoption of utility-scale PV technology in our targeted markets, as well as the demand for solar modules and systems generally, including the following:

- cost-effectiveness of the electricity generated by PV solar power systems compared to conventional energy sources, such as natural gas and coal (which fuel sources may be subject to significant price fluctuations from time to time), and other non-solar renewable energy sources, such as wind, geothermal, hydroelectric, and other such resources;
- performance, reliability, and availability of energy generated by PV solar power systems compared to conventional and other non-solar renewable energy sources and products, particularly conventional energy generation capable of providing 24-hour, non-intermittent baseload power;
- the development, functionality, scale, cost, and timing of storage solutions;
- the extent of competition, barriers to entry, and overall conditions and timing relating to the development of solar in new and emerging market segments such as commercial and industrial customers, community solar, microgrids, community choice aggregators, among other customer segments;
- changes in tax and other public policy, as well as in economic, market, and other conditions that affect the price of, and demand for, conventional energy resources, non-solar renewable energy resources (e.g., wind, hydropower), and energy efficiency programs and products, including increases or decreases in the prices of natural gas, coal, oil, and other fossil fuels and in the prices of competing renewable resources;
- changes in the amount and priorities of capital expenditures by end-users of solar modules and systems (e.g., utilities), which capital expenditures tend to decrease when the economy slows and when interest rates increase, which may result in redirection away from solar generation to development of competing forms of electric generation and to distribution (e.g., smart grid), transmission, and energy efficiency measures; and which otherwise may cause decreases in the market response to declining electricity demand and other pressing needs; and

- availability, substance, and magnitude of support programs including federal, state, and local government subsidies, incentives, targets and renewable portfolio standards, among other policies and programs, to accelerate the development of the solar industry.

The reduction, elimination, or expiration of government subsidies, economic incentives, tax incentives, renewable energy targets, and other support for on-grid solar electricity applications, or other adverse public policies, could reduce demand and/or price levels for our solar modules and systems and limit our growth or lead to a reduction in our net sales, thereby adversely impacting our operating results.

Although we believe that solar energy will experience widespread adoption in those applications where it competes economically with traditional forms of energy without any support programs, in certain markets our net sales and profit remain subject to variability based on the availability and size of government subsidies and economic incentives. Federal, state, and local governmental bodies in many countries have provided subsidies in the form of FiTs, rebates, tax incentives, and other incentives to end-users, distributors, system integrators, and manufacturers of PV solar products. Many of these support programs expire, phase out over time, require renewal by the applicable authority, or may be amended. A summary of certain recent developments in the major government support programs that may impact our business appears under Item 1. "Business—Support Programs." To the extent these support programs are reduced earlier than previously expected or are changed retroactively, or free-field or conversion land applications are disadvantaged, such changes could reduce demand and/or price levels for our solar modules and systems, lead to a reduction in our net sales, and adversely impact our operating results. Another consideration in the U.S. market, and to a lesser extent in other global markets, is the effect of governmental land-use planning policies and environmental policies on utility-scale PV solar development. The adoption of restrictive land-use designations or environmental regulations that proscribe or restrict the siting of utility-scale solar facilities could adversely affect the marginal cost of such development.

In addition, the results of the 2016 U.S. presidential election may create regulatory uncertainty in the renewable energy industry, including the solar energy industry, and our business, financial condition, and results of operations could be adversely affected as a result. Members of the current U.S. administration have made public statements that indicate that the administration may not be supportive of various clean energy programs and initiatives designed to curtail climate change and that it may be supportive of reducing the corporate tax rate and overturning or modifying policies of or regulations enacted by the prior administration that placed limitations on coal and gas electricity generation, mining, and/or exploration. If the current U.S. administration and/or the U.S. Congress takes action, or continues to publicly speak out about the need to take action, in furtherance of any such policies, we would be subject to significant risks, including the following:

- A reduction or removal of clean energy programs and initiatives and the incentives they provide may diminish the market for future solar energy offtake agreements and reduce the ability for solar developers to compete for future solar energy offtake agreements, which may reduce incentives for project developers to develop solar projects and purchase PV modules;
- Any limitations on the value or availability to potential investors of tax incentives that benefit solar energy projects such as the ITC and accelerated depreciation deductions could result in such investors generating reduced revenues and economic returns and facing a reduction in the availability of affordable financing, thereby reducing demand for PV modules. The ITC is a U.S. federal incentive that provides an income tax credit to the owner of the project after the project commences construction of up to 30% of eligible basis. A solar energy project must commence construction prior to January 1, 2020 and be placed in service prior to January 1, 2024 to qualify for the 30% ITC. A solar project that commences construction during 2020 and is placed in service prior to January 1, 2024 may qualify for an ITC equal to 26% of eligible basis. Under the Modified Accelerated Cost-Recovery System, owners of equipment used in a solar project

generally claim all of their depreciation deductions with respect to such equipment over five years, even though the useful life of such equipment is generally greater than five years.

- A reduction in the corporate tax rate could diminish the capacity of potential investors to benefit from incentives such as the ITC and reduce the value of accelerated depreciation deductions, thereby reducing the relative attractiveness of solar projects as an investment.
- Any effort to overturn federal and state laws, regulations, or policies that are supportive of solar energy generation or that remove costs or other limitations on other types of electricity generation that compete with solar energy projects could negatively impact our ability to compete with traditional forms of electricity generation and materially and adversely affect our business.

These examples show that established markets for PV solar development, such as the U.S. market, face uncertainties arising from policy, regulatory, and governmental constraints. While the expected potential of the emerging markets we are targeting is significant, policy promulgation and market development are especially vulnerable to governmental inertia, political instability, geopolitical risk, fossil fuel subsidization, potentially stringent localization requirements, and limited available infrastructure.

We may be unable to fully execute on our long term strategic plan, which could have a material adverse effect on our business, financial condition, or results of operations.

We face numerous difficulties in executing on our long term strategic plan, particularly in new foreign jurisdictions, including the following:

- difficulty in accurately prioritizing geographic markets which we can most effectively and profitably serve with our PV offerings, including miscalculations in overestimating or underestimating the addressable market demand;
- difficulty in competing against companies who may have greater financial resources and/or a more effective or established localized business presence and/or an ability to operate with minimal or negative operating margins for sustained periods of time;
- difficulty in overcoming the inertia involved in changing local electricity ecosystems as necessary to accommodate large-scale PV solar deployment and integration;
- adverse public policies in countries we operate in and/or are pursuing, including local content requirements or capital investment requirements;
- business climates, such as that in China, that may have the effect of putting foreign companies at a disadvantage relative to domestic companies;
- unstable economic, social, and/or operating environments in foreign jurisdictions, including social unrest, currency, inflation, and interest rate uncertainties;
- the possibility of applying an ineffective commercial approach to targeted markets, including product offerings that may not meet market needs;
- difficulty in generating sufficient sales volumes at economically sustainable profitability levels;
- difficulty in timely identifying, attracting, training, and retaining qualified sales, technical, and other personnel in geographies targeted for expansion;
- the possibility of having insufficient capital resources necessary to achieve an effective localized business presence in targeted jurisdictions;
- difficulty in maintaining proper controls and procedures as we expand our business operations both in terms of complexity and geographical reach, including transitioning certain business

functions to low-cost geographies, with any material control failure potentially leading to reputational damage and loss of confidence in our financial reporting accuracy;

- difficulty in competing successfully for market share in overall solar markets as a result of the success of companies participating in the global rooftop PV solar market, which is a segment in which we do not have significant historical experience;
- difficulty in establishing and implementing a commercial and operational approach adequate to address the specific needs of the markets we are pursuing;
- difficulty in identifying effective local partners and developing any necessary partnerships with local businesses on commercially acceptable terms; and
- difficulty in balancing market demand and manufacturing production in an efficient and timely manner, potentially causing us to be manufacturing capacity constrained in some future periods or over-supplied in others.

In addition, please see the Risk Factors entitled "Our substantial international operations subject us to a number of risks, including unfavorable political, regulatory, labor, and tax conditions in the United States and/or foreign countries," and "The reduction, elimination, or expiration of government subsidies, economic incentives, tax incentives, renewable energy targets, and other support for on-grid solar electricity applications, or other adverse public policies, could reduce demand and/or price levels for our solar modules and systems and limit our growth or lead to a reduction in our net sales, thereby adversely impacting our operating results."

We may be unable to profitably provide new solar offerings or achieve sufficient market penetration with such offerings.

We may expand our portfolio of offerings to include solutions that build upon our core competencies but for which we have not had significant historical experience, including variations in our traditional product offerings or other offerings related to commercial and industrial customers and community solar. We cannot be certain that we will be able to ascertain and allocate the appropriate financial and human resources necessary to grow these business areas. We could invest capital into growing these businesses but fail to address market or customer needs or otherwise not experience a satisfactory level of financial return. Also, in expanding into these areas, we may be competing against companies that previously have not been significant competitors, such as companies that currently have substantially more experience than we do in the rooftop, commercial and industrial, or other targeted offerings. If we are unable to achieve growth in these areas, our overall growth and financial performance may be limited relative to our competitors and our operating results could be adversely impacted.

An increase in interest rates or tightening of the supply of capital in the global financial markets (including a reduction in total tax equity availability) could make it difficult for customers to finance the cost of a PV solar power system and could reduce the demand for our modules or systems and/or lead to a reduction in the average selling price for such offerings.

Many of our customers and our systems business depend on debt and/or equity financing to fund the initial capital expenditure required to develop, build, and/or purchase a PV solar power system. As a result, an increase in interest rates, or a reduction in the supply of project debt financing or tax equity investments (including due to a change in tax related incentives that benefit tax equity investors), could reduce the number of solar projects that receive financing or otherwise make it difficult for our customers or our systems business to secure the financing necessary to develop, build, purchase, or install a PV solar power system on favorable terms, or at all, and thus lower demand for our solar modules which could limit our growth or reduce our net sales. See the Risk Factor entitled "The reduction, elimination, or expiration of government subsidies, economic incentives, tax incentives, renewable energy targets, and other support for on-grid solar electricity applications, or other adverse

public policies, could reduce demand and/or price levels for our solar modules and systems and limit our growth or lead to a reduction in our net sales, thereby adversely impacting our operating results" for additional information. In addition, we believe that a significant percentage of our end-users install systems as an investment, funding the initial capital expenditure through a combination of equity and debt. An increase in interest rates could lower an investor's return on investment in a system, increase equity return requirements, or make alternative investments more attractive relative to PV solar power systems and, in each case, could cause these end-users to seek alternative investments.

We could be adversely affected by any violations of the U.S. Foreign Corrupt Practices Act ("FCPA"), the U.K. Bribery Act, and other foreign anti-bribery laws.

The FCPA generally prohibits companies and their intermediaries from making improper payments to non-U.S. government officials for the purpose of obtaining or retaining business. Other countries in which we operate also have anti-bribery laws, some of which prohibit improper payments to government and non-government persons and entities, and others (e.g., the FCPA and the U.K. Bribery Act) extend their application to activities outside of their country of origin. Our policies mandate compliance with all applicable anti-bribery laws. We currently operate in, and pursuant to our long term strategic plan may further expand into, key parts of the world that have experienced governmental corruption to some degree and, in certain circumstances, strict compliance with anti-bribery laws may conflict with local customs and practices. In addition, due to the level of regulation in our industry, our operation in certain jurisdictions, including India, China, South America, and the Middle East, requires substantial government contact, either directly by us, or through intermediaries over whom we have less direct control, such as subcontractors, agents, and partners (such as joint venture partners), where norms can differ from U.S. standards. Although we have implemented policies, procedures, and, in certain cases, contractual arrangements designed to facilitate compliance with these anti-bribery laws, our officers, directors, associates, subcontractors, agents, and partners may take actions in violation of our policies, procedures, contractual arrangements, and anti-bribery laws. Any such violation, even if prohibited by our policies, could subject us and such persons to criminal and/or civil penalties or other sanctions, which could have a material adverse effect on our business, financial condition, cash flows, and reputation.

Risks Related to Regulations

Existing regulations and policies, changes thereto, and new regulations and policies may present technical, regulatory, and economic barriers to the purchase and use of PV products or systems, which may significantly reduce demand for our modules, systems, or services.

The market for electricity generation products is heavily influenced by foreign, federal, state, and local government regulations and policies concerning the electric utility industry, as well as policies promulgated by electric utilities. These regulations and policies often relate to electricity pricing and technical interconnection of customer-owned electricity generation. In the United States and in a number of other countries, these regulations and policies have been modified in the past and may be modified again in the future. These regulations and policies could deter end-user purchases of PV products or systems and investment in the R&D of PV technology. For example, without a mandated regulatory exception for PV solar power systems, utility customers are often charged interconnection or standby fees for putting distributed power generation on the electric utility grid. If these interconnection standby fees were applicable to PV solar power systems, it is likely that they would increase the cost of using such systems for end-users, which could make the systems less desirable, thereby adversely affecting our business, financial condition, and results of operations. In addition, with respect to utilities that utilize a peak hour pricing policy or time-of-use pricing methods whereby the price of electricity is adjusted based on electricity supply and demand, electricity generated by PV solar power systems currently benefits from competing primarily with expensive peak hour electricity, rather than the less expensive average price of electricity. Modifications to the peak hour pricing policies of

utilities, such as to a flat rate for all times of the day, would require PV solar power systems to achieve lower prices in order to compete with the price of electricity from other sources and would adversely impact our operating results.

Our modules, systems, and services (such as O&M) are subject to oversight and regulation in accordance with national and local ordinances relating to building codes, safety, environmental protection, utility interconnection and metering, and other matters, and tracking the requirements of individual jurisdictions is complex. Any new government regulations or utility policies pertaining to our modules, systems, or services may result in significant additional expenses to us or our customers and, as a result, could cause a significant reduction in demand for our modules, systems, or services. In addition, any regulatory compliance failure could result in significant management distraction, unplanned costs, and/or reputational damage.

Environmental obligations and liabilities could have a substantial negative impact on our financial condition, cash flows, and results of operations.

Our operations involve the use, handling, generation, processing, storage, transportation, and disposal of hazardous materials and are subject to extensive environmental laws and regulations at the national, state, local, and international levels. These environmental laws and regulations include those governing the discharge of pollutants into the air and water, the use, management, and disposal of hazardous materials and wastes, the cleanup of contaminated sites, and occupational health and safety. As we execute our long term strategic plan and expand our business into foreign jurisdictions worldwide, our environmental compliance burden may continue to increase both in terms of magnitude and complexity. We have incurred and may continue to incur significant costs in complying with these laws and regulations. In addition, violations of, or liabilities under, environmental laws or permits may result in restrictions being imposed on our operating activities or in our being subjected to substantial fines, penalties, criminal proceedings, third-party property damage or personal injury claims, cleanup costs, or other costs. Such solutions could also result in substantial delay or termination of projects under construction within our systems business, which could adversely impact our results of operations. While we believe we are currently in substantial compliance with applicable environmental requirements, future developments such as more aggressive enforcement policies, the implementation of new, more stringent laws and regulations, or the discovery of presently unknown environmental conditions may require expenditures that could have a material adverse effect on our business, financial condition, and results of operations.

Our solar modules contain CdTe and other semiconductor materials. Elemental cadmium and certain of its compounds are regulated as hazardous materials due to the adverse health effects that may arise from human exposure. Based on existing research, the risks of exposure to CdTe are not believed to be as serious as those relating to exposure to elemental cadmium. In our manufacturing operations, we maintain engineering controls to minimize our associates' exposure to cadmium or cadmium compounds and require our associates who handle cadmium compounds to follow certain safety procedures, including the use of personal protective equipment such as respirators, chemical goggles, and protective clothing. Relevant studies and third-party peer review of our technology have concluded that the risk of exposure to cadmium or cadmium compounds from our end-products is negligible. In addition, the risk of exposure is further minimized by the encapsulated nature of these materials in our products, the physical properties of cadmium compounds used in our products, and the recycling or responsible disposal of our modules. While we believe that these factors and procedures are sufficient to protect our associates, end-users, and the general public from adverse health effects that may arise from cadmium exposure, we cannot ensure that human or environmental exposure to cadmium or cadmium compounds used in our products will not occur. Any such exposure could result in future third-party claims against us, damage to our reputation, and heightened regulatory scrutiny, which could limit or impair our ability to sell and distribute our products. The occurrence of future events such as these could have a material adverse effect on our business, financial condition, and results of operations.

The use of cadmium or cadmium compounds in various products is also coming under increasingly stringent governmental regulation. Future regulation in this area could impact the manufacturing, sale, collection, and recycling of solar modules and could require us to make unforeseen environmental expenditures or limit our ability to sell and distribute our products. For example, European Union Directive 2011/65/EU on the Restriction of the Use of Hazardous Substances in electrical and electronic equipment (recast RoHS Directive) restricts the use of certain hazardous substances, including cadmium and its compounds, in specified products. Other jurisdictions, such as China, have adopted similar legislation or are considering doing so. Currently, PV modules are explicitly excluded from the scope of recast RoHS (Article 2), as adopted by the European Parliament and the Council in June 2011. The next general review of the RoHS Directive is scheduled for 2021, involving a broader discussion of the existing scope. A scope review focusing on additional exclusions is expected to be proposed by the European Commission in 2017 under the EU's co-decision process which allows the European Parliament and the European Council to amend the European Commission's proposal on exclusions. The co-decision procedure is expected to be completed in 2018. If PV modules were to be included in the scope of future RoHS revisions without an exemption or exclusion, we would be required to redesign our solar modules to reduce cadmium and other affected hazardous substances to the maximum allowable concentration thresholds in the RoHS Directive in order to continue to offer them for sale within the EU. As such actions would be impractical, this type of regulatory development would effectively close the EU market to us, which could have a material adverse effect on our business, financial condition, and results of operations.

As an owner and operator of PV solar power systems that deliver electricity to the grid, certain of our affiliated entities may be regulated as public utilities under U.S. federal and state law, which could adversely affect the cost of doing business and limit our growth.

As an owner and operator of PV solar power systems that deliver electricity to the grid, certain of our affiliated entities may be considered public utilities for purposes of the Federal Power Act, as amended (the "FPA"), and public utility companies for purposes of the Public Utility Holding Company Act of 2005 ("PUHCA 2005"), and are subject to regulation by the FERC, as well as various local and state regulatory bodies.

Some of our affiliated entities may be exempt wholesale generators or qualifying facilities under the Public Utility Regulatory Policies Act of 1978, as amended ("PURPA"), and as such are exempt from regulation under PUHCA 2005. In addition, our affiliated entities may be exempt from most provisions of the FPA, as well as state laws regarding the financial or organizational regulation of public utilities. We are not directly subject to FERC regulation under the FPA. However, we are considered to be a "holding company" for purposes of Section 203 of the FPA, which regulates certain transactions involving public utilities, and such regulation could adversely affect our ability to grow the business through acquisitions. Likewise, investors seeking to acquire our public utility subsidiaries or acquire ownership interests in our securities sufficient to give them control over us and our public utility subsidiaries may require prior FERC approval to do so. Such approval could result in transaction delays or uncertainties.

Public utilities under the FPA are required to obtain FERC acceptance of their rate schedules for wholesale sales of electricity and to comply with various regulations. The FERC may grant our affiliated entities the authority to sell electricity at market-based rates and may also grant them certain regulatory waivers, such as waivers from compliance with FERC's accounting regulations. These FERC orders reserve the right to revoke or revise market-based sales authority if the FERC subsequently determines that our affiliated entities can exercise market power in the sale of generation products, the provision of transmission services, or if it finds that any of the entities can create barriers to entry by competitors. In addition, if the entities fail to comply with certain reporting obligations, the FERC may revoke their power sales tariffs. Finally, if the entities were deemed to have engaged in manipulative or

deceptive practices concerning their power sales transactions, they would be subject to potential fines, disgorgement of profits, and/or suspension or revocation of their market-based rate authority. If our affiliated entities were to lose their market-based rate authority, such companies would be required to obtain the FERC's acceptance of a cost-of-service rate schedule and could become subject to the accounting, record-keeping, and reporting requirements that are imposed on utilities with cost-based rate schedules, which would impose cost and compliance burdens on us and have an adverse effect on our results of operations. In addition to the risks described above, we may be subject to additional regulatory regimes at state or foreign levels to the extent we own and operate PV solar power systems in such jurisdictions.

Risks Related to our Operations, Manufacturing, and Technology

Our future success depends on our ability to effectively balance manufacturing production with market demand, convert existing production facilities to support new product lines, such as our transition to Series 6 module manufacturing, and, when necessary, continue to build new manufacturing plants over time in response to such demand and add production lines in a cost-effective manner, all of which are subject to risks and uncertainties.

Our future success depends on our ability to effectively balance manufacturing production with market demand, convert existing production facilities to support new product lines, such as our transition to Series 6 module manufacturing, and increase both our manufacturing capacity and production throughput over time in a cost-effective and efficient manner. If we cannot do so, we may be unable to expand our business, decrease our manufacturing cost per watt, maintain our competitive position, satisfy our contractual obligations, sustain profitability, or realize our expected return on invested capital. Our ability to expand production capacity, or to convert existing production facilities to support new product lines, such as our transition to Series 6 module manufacturing, is subject to significant risks and uncertainties, including the following:

- delays and cost overruns as a result of a number of factors, many of which may be beyond our control, such as our inability to secure successful contracts with equipment vendors;
- our custom-built equipment taking longer and costing more to manufacture than expected and not operating as designed;
- delays or denial of required approvals by relevant government authorities;
- being unable to hire qualified staff;
- failure to execute our expansion or conversion plans effectively;
- manufacturing concentration risk resulting from a majority of our production lines worldwide being located in one geographic area, Malaysia, and the possible inability to meet customer demand in the event of compromises to shipping processes, supply chain, or other aspects of such facility;
- difficulty in balancing market demand and manufacturing production in an efficient and timely manner, potentially causing us to be manufacturing capacity constrained in some future periods or over-supplied in others; and
- incurring manufacturing asset write-downs, write-offs, and other charges and costs, which may be significant, during those periods in which we idle, slow down, shut down, convert, or otherwise adjust our manufacturing capacity.

Our operating history to date may not serve as an adequate basis to judge our future prospects and results of operations.

Our historical operating results may not provide a meaningful basis for evaluating our business, financial performance, and prospects. We may be unable to achieve similar growth, or grow at all, in future periods. Our ability to achieve similar growth in future periods is also affected by current economic conditions. Our past results occurred in an environment where, among other things, capital was at times more accessible to our customers to finance the cost of developing solar projects and economic incentives for solar power in certain markets were more favorable. Accordingly, you should not rely on our results of operations for any prior period as an indication of our future performance.

We face intense competition from manufacturers of crystalline silicon solar modules, as well as other thin-film solar modules; if global supply continues to exceed global demand, it could lead to a further reduction in the average selling price for PV modules, which could reduce our net sales and adversely affect our results of operations.

The solar and renewable energy industries are highly competitive and are continually evolving as participants strive to distinguish themselves within their markets and compete with the larger electric power industry. Within the global PV solar industry, we face intense competition from crystalline silicon solar module manufacturers and other thin-film solar module manufacturers. Existing or future solar module manufacturers might be acquired by larger companies with significant capital resources, thereby further intensifying competition with us. In addition, the introduction of a low cost disruptive technology, such as commercially viable energy storage, could adversely affect our ability to compete, which could reduce our net sales and adversely affect our results of operations.

Even if demand for solar modules continues to grow, the rapid manufacturing capacity expansion undertaken by many solar module manufacturers, particularly manufacturers of crystalline silicon solar modules, has created and may continue to cause periods of structural imbalance in which supply exceeds demand. We believe the solar industry is currently in such a period. See the Risk Factor entitled "Competition in solar markets globally and across the solar value chain is intense, and could remain that way for an extended period of time. An increased global supply of PV modules has caused and may continue to cause structural imbalances in which global PV module supply exceeds demand, which could have a material adverse effect on our business, financial condition, and results of operations," for additional information. In addition, we believe any significant decrease in the cost of silicon feedstock or polysilicon would reduce the manufacturing cost of crystalline silicon solar modules and lead to further pricing pressure for solar modules and potentially an oversupply of solar modules. We also believe the crystalline silicon module manufacturers are currently transitioning from multi-crystalline wafer technology (historically our primary competitor) to more efficient mono-crystalline wafer technology. Such transition is being facilitated by the emergence of new and low cost mono wafer suppliers, primarily from China, coupled with the gradual industry transition to Passivated Emitter Rear Contact ("PERC") cell technology. As a result, we expect that in the future, our primary competition might transition from multi-crystalline to mono-crystalline PERC with higher conversion efficiencies.

During any such period, our competitors could decide to reduce their sales prices in response to competition, even below their manufacturing costs, in order to generate sales, and may do so for a sustained period. Other competitors may have direct or indirect access to sovereign capital, which could enable such competitors to operate at minimal or negative operating margins for sustained periods of time. As a result, we may be unable to sell our solar modules or systems at attractive prices, or for a profit, during any period of excess supply of solar modules, which would reduce our net sales and adversely affect our results of operations. Also, we may decide to lower our average selling prices to certain customers in certain markets in response to competition, which could also reduce our net sales and adversely affect our results of operations.

Problems with product quality or performance may cause us to incur significant and/or unexpected warranty and related expenses, damage our market reputation, and prevent us from maintaining or increasing our market share.

We perform a variety of module quality and life tests under different conditions upon which we base our assessments and warranty of module performance over the duration of the warranty. However, if our thin-film solar modules perform below expectations, we could experience significant warranty and related expenses, damage to our market reputation, and erosion of our market share. With respect to our modules, we provide a limited warranty covering defects in materials and workmanship under normal use and service conditions for generally 10 years. We also typically warrant that modules installed in accordance with agreed-upon specifications will produce at least 97% of their labeled power output rating during the first year, with the warranty coverage reducing by 0.7% every year thereafter throughout the 25-year performance warranty period. As an alternative form of our module power output warranty, we also offer an aggregated or system-level module performance warranty. This system-level module performance warranty is designed for utility-scale systems and also provides 25-year system-level energy degradation protection. The system-level module performance warranty typically is calculated as a percentage of a system's expected energy production, adjusted for certain actual site conditions, with the warranted level of performance declining each year in a linear fashion, but never falling below 80% during the term of the warranty. As a result of these programs, we bear the risk of product warranty claims long after we have sold our solar modules and recognized net sales.

If any of the assumptions used in estimating our module warranties prove incorrect, we could be required to accrue additional expenses, which could adversely impact our financial position, operating results, and cash flows. Although we have taken significant precautions to avoid a manufacturing excursion from occurring, any manufacturing excursions, including any commitments made by us to take remediation actions in respect of affected modules beyond our warranties, could adversely impact our reputation, financial position, operating results, and cash flows.

Although our module performance warranties extend for 25 years, our oldest solar modules manufactured during the qualification of our pilot production line have only been in use since 2001. Accordingly, our warranties are based on a variety of quality and life tests that enable predictions of durability and future performance. These predictions, however, could prove to be materially different from the actual performance during the warranty period, causing us to incur substantial expense to repair or replace defective solar modules or provide financial remuneration in the future. For example, our solar modules could suffer various failure modes, including breakage, delamination, corrosion, or performance degradation in excess of expectations, and our manufacturing operations or supply chain could be subject to materials or process variations that could cause affected modules to fail or underperform compared to our expectations. These risks could be amplified as we implement design and process changes in connection with our efforts to improve our products and accelerate module conversion efficiencies as part of our long term strategic plan. In addition, as we increase the number of installations in extreme climates, we may experience increased failure rates due to deployment into such field conditions. Any widespread product failures may damage our market reputation, cause our net sales to decline, require us to repair or replace the defective modules or provide financial remuneration, and result in us taking voluntary remedial measures beyond those required by our standard warranty terms to enhance customer satisfaction, which could have a material adverse effect on our operating results.

In resolving claims related to defective modules, we typically have the option to repair or replace the covered modules, provide additional modules, or make a cash payment equal to the then-current market price of the modules; however, historical versions of our module warranty did not provide a refund remedy. Consequently, we may be obligated to repair or replace the covered modules under such historical programs. As our manufacturing process may change from time-to-time in accordance with our technology roadmap, we may elect to stop production of older versions of our modules that

would constitute compatible replacement modules. In some jurisdictions, our inability to provide compatible replacement modules could potentially expose us to liabilities beyond the limitations of our module warranties, which could adversely impact our reputation, financial position, operating results, and cash flows.

In addition to our solar module warranties, we also provide warranties for our BoS equipment, including, but not limited to, mounting structures, solar trackers, electronics, and cabling. These warranties cover defects in materials and workmanship for one to five years for most equipment and up to 10 years for mounting structures. As with our modules, these warranties are based on a variety of quality and life tests that enable predictions of durability and future performance. For PV solar power systems we construct, we also typically provide a limited warranty against defects in engineering design, installation, and workmanship for a period of one to two years following the substantial completion of a system. Any failures in BoS equipment or system construction beyond our expectations may also adversely impact our reputation, financial position, operating results, and cash flows.

As part of our systems business, we may provide an energy performance test during the first year or two of a system's operation. Such a test is designed to demonstrate that the actual energy generation for the applicable year meets or exceeds the modeled energy expectation, after certain adjustments, such as irradiance, weather, module degradation, soiling, curtailment, and other conditions that may affect a system's energy output but are unrelated to quality, design, or construction. If there is an underperformance event, determined at the end of the first or second year after substantial completion, we may incur liquidated damages as a percentage of the contract price, which may adversely impact our financial position, operating results, and cash flows.

If our estimates regarding the future costs of collecting and recycling CdTe solar modules covered by our solar module collection and recycling program are incorrect, we could be required to accrue additional expenses and face a significant unplanned cash burden.

As necessary, we fund any incremental amounts for our estimated collection and recycling obligations each year. We determine the funding requirement, if any, based on estimated costs of collecting and recycling covered modules, estimated rates of return on our restricted investments, and an estimated solar module life of 25 years less amounts already funded in prior years. We estimate the cost of our collection and recycling obligations based on the present value of the expected probability weighted future cost of collecting and recycling the solar modules, which includes estimates for the cost of packaging materials, the cost of freight from the solar module installation sites to a recycling center, the material, labor, capital costs, and scale of recycling centers, and an estimated third-party profit margin and return on risk for collection and recycling services. We base these estimates on (i) our experience collecting and recycling our solar modules, (ii) the expected timing of when our solar modules will be returned for recycling, and (iii) expected economic conditions at the time the solar modules will be collected and recycled. If our estimates prove incorrect, we could be required to accrue additional expenses and could also face a significant unplanned cash burden at the time we realize our estimates are incorrect or end-users return their modules, which could adversely affect our operating results. In addition, participating end-users can return their modules covered under the collection and recycling program at any time. As a result, we could be required to collect and recycle covered CdTe solar modules earlier than we expect.

Our failure to further refine our technology, reduce module manufacturing and BoS costs, and develop and introduce improved PV products could render our solar modules or systems uncompetitive and reduce our net sales, profitability, and/or market share.

We need to continue to invest significant financial resources in R&D to continue to improve our module conversion efficiencies, lower the LCOE of our PV solar power systems, and otherwise keep pace with technological advances in the solar industry. However, R&D activities are inherently

uncertain, and we could encounter practical difficulties in commercializing our research results. We seek to continuously improve our products and processes, including, for example, through our recently announced intention to accelerate our transition to Series 6 module manufacturing, and the resulting changes carry potential risks in the form of delays, additional costs, or other unintended contingencies. In addition, our significant expenditures on R&D may not produce corresponding benefits. Other companies are developing a variety of competing PV technologies, including advanced multi-crystalline silicon cells, PERC or advanced p-type crystalline silicon cells, high-efficiency n-type crystalline silicon cells, copper indium gallium diselenide thin films, amorphous silicon thin films, and new emerging technologies such as hybrid perovskites, which could produce solar modules or systems that prove more cost-effective or have better performance than our solar modules or systems. In addition, other companies could potentially develop a highly reliable renewable energy system that mitigates the intermittent power generation drawback of many renewable energy systems, or offer other value-added improvements from the perspective of utilities and other system owners, in which case such companies could compete with us even if the LCOE associated with such new systems is higher than that of our systems. As a result, our solar modules or systems may be negatively differentiated or rendered obsolete by the technological advances of our competitors, which would reduce our net sales, profitability, and/or market share. In addition, we often forward price our products and services in anticipation of future cost reductions and technology improvements, and thus, an inability to further refine our technology and execute our module conversion efficiency and cost reduction roadmaps could adversely affect our operating results.

Our failure to protect our intellectual property rights may undermine our competitive position, and litigation to protect our intellectual property rights or defend against third-party allegations of infringement may be costly.

Protection of our proprietary processes, methods, and other technology is critical to our business. Failure to protect and monitor the use of our existing intellectual property rights could result in the loss of valuable technologies. We rely primarily on patents, trademarks, trade secrets, copyrights, and contractual restrictions to protect our intellectual property. We regularly file patent applications to protect certain inventions arising from our R&D and are currently pursuing such patent applications in various countries in accordance with our strategy for intellectual property in that jurisdiction. Our existing patents and future patents could be challenged, invalidated, circumvented, or rendered unenforceable. Our pending patent applications may not result in issued patents, or if patents are issued to us, such patents may not be sufficient to provide meaningful protection against competitors or against competitive technologies.

We also rely upon unpatented proprietary manufacturing expertise, continuing technological innovation, and other trade secrets to develop and maintain our competitive position. Although we generally enter into confidentiality agreements with our associates and third parties to protect our intellectual property, such confidentiality agreements are limited in duration and could be breached and may not provide meaningful protection for our trade secrets or proprietary manufacturing expertise. Adequate remedies may not be available in the event of unauthorized use or disclosure of our trade secrets and manufacturing expertise. In addition, others may obtain knowledge of our trade secrets through independent development or legal means. The failure of our patents or confidentiality agreements to protect our processes, equipment, technology, trade secrets, and proprietary manufacturing expertise, methods, and compounds could have a material adverse effect on our business. In addition, effective patent, trademark, copyright, and trade secret protection may be unavailable or limited in some foreign countries, especially any developing countries into which we may expand our operations. In some countries we have not applied for patent, trademark, or copyright protection.

Third parties may infringe or misappropriate our proprietary technologies or other intellectual property rights, which could have a material adverse effect on our business, financial condition, and operating results. Policing unauthorized use of proprietary technology can be difficult and expensive. Also, litigation may be necessary to enforce our intellectual property rights, protect our trade secrets, or determine the validity and scope of the proprietary rights of others. We cannot ensure that the outcome of such potential litigation will be in our favor, and such litigation may be costly and may divert management attention and other resources away from our business. An adverse determination in any such litigation may impair our intellectual property rights and may harm our business, prospects, and reputation. In addition, we have no insurance coverage against such litigation costs and would have to bear all costs arising from such litigation to the extent we are unable to recover them from other parties.

Several of our key raw materials and components are either single-sourced or sourced from a limited number of third-party suppliers, and their failure to perform could cause manufacturing delays and impair our ability to deliver solar modules to customers in the required quality and quantities and at a price that is profitable to us.

Our failure to obtain raw materials and components that meet our quality, quantity, and cost requirements in a timely manner could interrupt or impair our ability to manufacture our solar modules or increase our manufacturing cost. Several of our key raw materials and components are either single-sourced or sourced from a limited number of third-party suppliers. As a result, the failure of any of our suppliers to perform could disrupt our supply chain and adversely impact our operations. In addition, some of our suppliers are small companies that may be unable to supply our increasing demand for raw materials and components as we expand our business. We may be unable to identify new suppliers or qualify their products for use on our production lines in a timely manner and on commercially reasonable terms. A constraint on our production may cause us to be unable to meet our capacity plans and/or our obligations under our customer contracts, which would have an adverse impact on our business. Additionally, reductions in our production volume may put pressure on suppliers, resulting in increased material and component costs.

A disruption in our supply chain for CdTe could interrupt or impair our ability to manufacture solar modules and could adversely impact our profitability and long-term growth prospects.

A key raw material used in our module production process is a CdTe compound. Tellurium, one of the main components of CdTe, is mainly produced as a by-product of copper refining, and therefore, its supply is largely dependent upon demand for copper. Our supply of CdTe could be limited if any of our current suppliers or any of our future suppliers are unable to acquire an adequate supply of tellurium in a timely manner or at commercially reasonable prices. If our current suppliers or any of our future suppliers cannot obtain sufficient tellurium, they could substantially increase prices or be unable to perform under their contracts. Furthermore, if our competitors begin to use or increase their demand for tellurium, our requirements for tellurium increase, or new applications for tellurium become available, the supply of tellurium and related CdTe compounds could be reduced and prices could increase. As we may be unable to pass such increases in the costs of our raw materials through to our customers, a substantial increase in tellurium prices or any limitations in the supply of tellurium could adversely impact our profitability and long-term growth objectives.

If any future production lines are not built in line with our committed schedules it may impair any future growth plans. If any future production lines do not achieve operating metrics similar to our existing production lines, our solar modules could perform below expectations and cause us to lose customers.

If we are unable to systematically replicate our production lines as necessary over time and achieve and sustain similar operating metrics in our future production lines as we have achieved at our existing

production lines, our manufacturing capacity could be substantially constrained, our manufacturing costs per watt could increase, and our growth could be limited. Such factors may result in lower net sales and lower net income than we anticipate. For instance, future production lines could produce solar modules that have lower conversion efficiencies, higher failure rates, and higher rates of degradation than solar modules from our existing production lines, and we could be unable to determine the cause of the lower operating metrics or develop and implement solutions to improve performance.

Some of our manufacturing equipment is customized and sole sourced. If our manufacturing equipment fails or if our equipment suppliers fail to perform under their contracts, we could experience production disruptions and be unable to satisfy our contractual requirements.

Some of our manufacturing equipment, including manufacturing equipment related to the production of our Series 6 modules, is customized to our production lines based on designs or specifications that we provide to equipment manufacturers, which then undertake a specialized process to manufacture the custom equipment. As a result, the equipment is not readily available from multiple vendors and would be difficult to repair or replace if it were to become damaged or stop working. If any piece of equipment fails, production along the entire production line could be interrupted. In addition, the failure of our equipment manufacturers to supply equipment in a timely manner or on commercially reasonable terms could delay our expansion or conversion plans, otherwise disrupt our production schedule, and/or increase our manufacturing costs, all of which would adversely impact our operating results.

We may be unable to manage the expansion of our operations effectively.

We expect to continue to expand our business in order to provide utility-scale PV solar energy solutions to existing and new geographic markets and to maintain or increase our market share. To manage the continued expansion of our operations, we would be required to continue to improve our operational and financial systems as well as our procedures and controls. Our management would also be required to maintain and expand our relationships with customers, suppliers, and other third parties and attract new customers and suppliers. In addition, our current and planned operations, personnel, systems, and internal controls and procedures might be inadequate to support our future growth. The effectiveness of our controls and procedures could be adversely impacted to the extent we transfer more business functions to lower cost geographies as part of our cost reduction initiatives. If we cannot manage our growth effectively, we may be unable to take advantage of market opportunities, execute our business strategies, or respond to competitive pressures.

Our substantial international operations subject us to a number of risks, including unfavorable political, regulatory, labor, and tax conditions in the United States and/or foreign countries.

We have significant development, construction, sales, marketing, and manufacturing operations both within and outside the United States and expect to continue to expand our operations worldwide. As a result, we are subject to the legal, political, social, tax, and regulatory requirements, and economic conditions, of many jurisdictions. Risks inherent to international operations include, but are not limited to, the following:

- difficulty in enforcing agreements in foreign legal systems;
- difficulty in forming appropriate legal entities to conduct business in foreign countries and the associated costs of forming those legal entities;
- varying degrees of protection afforded to foreign investments in the countries in which we operate and irregular interpretations and enforcement of laws and regulations in such jurisdictions;

- foreign countries may impose additional income and withholding taxes or otherwise tax our foreign operations, impose tariffs, or adopt other restrictions on foreign trade and investment, including currency exchange controls;
- fluctuations in exchange rates may affect demand for our products and services and may adversely affect our profitability and cash flow in U.S. dollars to the extent that our net sales or our costs are denominated in a foreign currency and the cost associated with hedging the U.S. dollar equivalent of such exposures is prohibitive; the longer the duration of such foreign currency exposure, the greater the risk;
- anti-corruption compliance issues, including the costs related to the mitigation of such risk;
- inability to obtain, maintain, or enforce intellectual property rights;
- risk of nationalization or other expropriation of private enterprises;
- changes in general economic and political conditions in the countries in which we operate, including changes in government incentive provisions;
- unexpected adverse changes in U.S. or foreign laws or regulatory requirements, including those with respect to environmental protection, import or export duties, and quotas;
- opaque approval processes in which the lack of transparency may cause delays and increase the uncertainty of project approvals;
- difficulty in staffing and managing widespread operations;
- difficulty in repatriating earnings;
- difficulty in negotiating a successful collective bargaining agreement in applicable foreign jurisdictions;
- trade barriers such as export requirements, tariffs, taxes, local content requirements, anti-dumping regulations and requirements, and other restrictions and expenses, which could increase the effective price of our solar modules and make us less competitive in some countries; and
- difficulty of, and costs relating to, compliance with the different commercial and legal requirements of the overseas countries in which we offer and sell our solar modules.

Our business in foreign markets requires us to respond to rapid changes in market conditions in these countries. Our overall success as a global business depends, in part, on our ability to succeed in differing legal, regulatory, economic, social, and political conditions. We may not be able to develop and implement policies and strategies that will be effective in each location where we do business.

Risks Related to Our Systems Business

Project development or construction activities may not be successful; projects under development may not receive required permits, real property rights, PPAs, interconnection, and transmission arrangements; or financing or construction may not commence or proceed as scheduled, which could increase our costs and impair our ability to recover our investments.

The development and construction of solar energy generation facilities and other energy infrastructure projects involve numerous risks. We may be required to spend significant sums for land and interconnection rights, preliminary engineering, permitting, legal services, and other expenses before we can determine whether a project is feasible, economically attractive, or capable of being built. Success in developing a particular project is contingent upon, among other things:

- obtaining financeable land rights, including land rights for the project site, transmission lines, and environmental mitigation;

- entering into financeable arrangements for the purchase of the electrical output and renewable energy attributes generated by the project;
- receipt from governmental agencies of required environmental, land-use, and construction and operation permits and approvals;
- receipt of tribal government approvals for projects on tribal land;
- receipt of governmental approvals related to the presence of any protected or endangered species or habitats, migratory birds, wetlands or other jurisdictional water resources, and/or cultural resources;
- negotiation of development agreements, public benefit agreements, and other agreements to compensate local governments for project impacts;
- negotiation of state and local tax abatement and incentive agreements;
- receipt of rights to interconnect the project to the electric grid or to transmit energy;
- negotiation of satisfactory EPC agreements;
- securing necessary rights of way for access and transmission lines;
- securing necessary water rights for project construction and operation;
- securing appropriate title coverage, including coverage for mineral rights, mechanics' liens, etc.;
- obtaining financing, including debt, equity, and funds associated with the monetization of tax credits and other tax benefits;
- payment of PPA, interconnection, and other deposits (some of which are non-refundable);
- providing required payment and performance security for the development of the project, such as through the provision of letters of credit; and
- timely implementation and satisfactory completion of construction.

Successful completion of a particular project may be adversely affected, delayed and/or rendered infeasible by numerous factors, including:

- delays in obtaining and maintaining required governmental permits and approvals, including appeals of approvals obtained;
- potential permit and litigation challenges from project stakeholders, including local residents, environmental organizations, labor organizations, tribes, and others who may oppose the project;
- in connection with any such permit and litigation challenges, grants of injunctive relief to stop development and/or construction of a project;
- discovery of unknown impacts to protected or endangered species or habitats, migratory birds, wetlands or other jurisdictional water resources, and/or cultural resources at project sites;
- discovery of unknown title defects;
- discovery of unknown environmental conditions;
- unforeseen engineering problems;
- construction delays and contractor performance shortfalls;
- work stoppages;
- cost over-runs;

- labor, equipment, and materials supply shortages, failures, or disruptions;
- cost or schedule impacts arising from changes in federal, state, or local land-use or regulatory policies;
- changes in electric utility procurement practices;
- risks arising from transmission grid congestion issues;
- project delays that could adversely impact our ability to maintain interconnection rights;
- additional complexities when conducting project development or construction activities in foreign jurisdictions (either on a stand-alone basis or in collaboration with local business partners), including operating in accordance with the FCPA and applicable local laws and customs;
- unfavorable tax treatment or adverse changes to tax policy;
- adverse weather conditions;
- water shortages;
- adverse environmental and geological conditions; and
- force majeure and other events out of our control.

If we fail to complete the development of a solar energy project, fail to meet one or more agreed upon target construction milestone dates, fail to achieve system-level capacity, or fail to meet other contract terms, we may be subject to forfeiture of significant deposits under PPAs or interconnection agreements or termination of such agreements, incur significant liquidated damages, penalties, and/or other obligations under other project related agreements, and may not be able to recover our investment in the project. Some of these investments are included as assets on our consolidated balance sheets under the line item "Project assets and deferred project costs." If we are unable to complete the development of a solar energy project, we may write-down or write-off some or all of these capitalized investments, which would have an adverse impact on our net income in the period in which the loss is recognized.

We may be unable to acquire or lease land, obtain necessary interconnection and transmission rights, and/or obtain the approvals, licenses, permits, and electric transmission grid interconnection and transmission rights necessary to build and operate PV solar power systems in a timely and cost effective manner, and regulatory agencies, local communities, labor unions, tribes, or other third parties may delay, prevent, or increase the cost of construction and operation of the system we intend to build.

In order to construct and operate our PV solar power systems, we need to acquire or lease land and rights of way, obtain interconnection rights, negotiate agreements with affected transmission systems, and obtain all necessary local, county, state, federal, and foreign approvals, licenses, and permits, as well as rights to interconnect the systems to the transmission grid and transmit energy generated from the system. We may be unable to acquire the land or lease interests needed, may not obtain or maintain satisfactory interconnection rights, may have difficulty reaching agreements with affected transmission systems and/or incur unexpected network upgrade costs, may not receive or retain the requisite approvals, permits, licenses, and interconnection and transmission rights, or may encounter other problems that could delay or prevent us from successfully constructing and operating such systems.

Many of our proposed projects are located on or require access through public lands administered by federal and state agencies pursuant to competitive public leasing and right-of-way procedures and processes. Other of our proposed projects are located on tribal land pursuant to land agreements that must be approved by tribal governments and federal agencies. The authorization for the use, construction, and operation of systems and associated transmission facilities on federal, tribal, state, and

private lands will also require the assessment and evaluation of mineral rights, private rights-of-way, and other easements; environmental, agricultural, cultural, recreational, and aesthetic impacts; and the likely mitigation of adverse impacts to these and other resources and uses. The inability to obtain the required permits and other federal, tribal, state and local approvals, and potentially, any excessive delays in obtaining such permits and approvals due, for example, to litigation or third-party appeals, could prevent us from successfully constructing and operating such systems in a timely manner and could result in the potential forfeiture of any deposit we have made with respect to a given project. Moreover, project approvals subject to project modifications and conditions, including mitigation requirements and costs, could affect the financial success of a given project. Changing regulatory requirements and the discovery of unknown site conditions could also affect the financial success of a given project.

In addition, local labor unions may increase the cost of, and/or lower the productivity of, project development in California and elsewhere. We may also be subject to labor unavailability and/or increased union labor requirements due to multiple simultaneous projects in a geographic region.

Competition at the system level can be intense, thereby potentially exerting downward pressure on system-level profit margins industry-wide, which could reduce our profitability and adversely affect our results of operations.

The significant decline in PV module prices over the last several years continues to create a challenging environment for module manufacturers, but it has also increased interest in solar electricity worldwide by eroding one of the primary historical constraints to widespread solar market penetration, namely its affordability. Aided by such lower module prices, our customers and potential customers have in many cases been willing and able to bid aggressively for new projects and PPAs, using low cost assumptions for modules, BoS components, installation, maintenance, and other costs as the basis for such bids. Relatively low barriers to entry for solar project developers and EPC companies, including those we compete with, have led to, depending on the market and other factors, intense competition at the system level. Intense competition at the system level can result in an environment in which system-level pricing falls rapidly, thereby further increasing demand for solar solutions but constraining the ability for project developers, EPC companies, and/or vertically-integrated solar companies such as First Solar to sustain meaningful and consistent profitability. Accordingly, while we believe our system offerings and experience are positively differentiated in many cases from that of our competitors, we may fail to correctly identify our competitive position, we may be unable to develop or maintain a sufficient magnitude of new system projects worldwide at economically attractive rates of return, and we may not otherwise be able to achieve meaningful profitability under our long term strategic plan.

Depending on the market opportunity, we may be at a disadvantage compared to potential system-level competitors. For example, certain of our competitors may have a stronger and/or more established localized business presence in a particular geographic region. Certain of our competitors may be larger entities that have greater financial resources and greater overall brand name recognition than we do and, as a result, may be better positioned to impact customer behavior or adapt to changes in the industry or the economy as a whole. Certain competitors may also have direct or indirect access to sovereign capital and/or other incentives, which could enable such competitors to operate at minimal or negative operating margins for sustained periods of time.

Additionally, large-scale solar systems are still in their relatively early stages of existence, and, depending on the geographic area, certain potential customers may still be in the process of educating themselves about the points of differentiation among various available providers of PV solar solutions, including a company's proven overall experience and bankability, system design and optimization expertise, grid interconnection and stabilization expertise, and proven O&M capabilities. If we are unable over time to meaningfully differentiate our offerings at scale, or if available competitive pricing is prioritized over the value we believe is added through our system offerings and experience, from the viewpoint of our potential customer base, our business, financial condition, and results of operations could be adversely affected.

We may not be able to obtain long-term contracts for the sale of power produced by our projects at prices and on other terms favorable to attract financing and other investments; with regard to projects for which electricity is or will be sold on an open-contract basis rather than under a PPA, our results of operations could be adversely affected to the extent prevailing spot electricity prices decline in an unexpected manner.

Obtaining long-term contracts for the sale of power produced by our projects at prices and on other terms favorable to us is essential for obtaining financing and commencing construction of our projects. We must compete for PPAs against other developers of solar and renewable energy projects. This intense competition for PPAs has resulted in downward pressure on PPA pricing for newly contracted projects. In addition, we believe the solar industry is currently experiencing a period of structural imbalance between supply and demand that is putting downward pressure on module pricing. This downward pressure on module pricing also creates downward pressure on PPA pricing for newly contracted projects. See the Risk Factor entitled "Competition at the system level can be intense, thereby potentially exerting downward pressure on system-level profit margins industry-wide, which could reduce our profitability and adversely affect our results of operations" for additional information. If falling PPA pricing results in projected project revenue that is insufficient to generate returns anticipated to be demanded in the project sale market, our business, financial condition, and results of operations could be adversely affected.

Other sources of power, such as natural gas-fired power plants, have historically been cheaper than the cost of solar power, and certain types of generation projects, such as natural gas-fired power plants, can deliver power on a firm basis. The inability to compete successfully against other power producers or otherwise enter into PPAs favorable to us would negatively affect our ability to develop and finance our projects and negatively impact our revenue. In addition, the availability of PPAs is dependent on utility and corporate energy procurement practices that could evolve and shift allocation of market risks over time. In addition, PPA availability and terms are a function of a number of economic, regulatory, tax, and public policy factors, which are also subject to change. Also, certain of our projects may be scheduled for substantial completion prior to the commencement of a long-term PPA with a major off-taker, in which case we would be required to enter into a stub-period PPA for the intervening time period or sell down the project. We may not be able to do either on terms that are commercially attractive to us. Finally, the electricity from certain of our projects is or is expected to be sold on an open-contract basis for a period of time rather than under a PPA. If prevailing spot electricity prices relating to any such project were to decline in an unexpected manner, such project may decline in value and our results of operations could otherwise be adversely affected.

Lack of transmission capacity availability, potential upgrade costs to the transmission grid, and other systems constraints could significantly impact our ability to build PV solar power systems and generate solar electricity power sales.

In order to deliver electricity from our PV solar power systems to our customers, our projects generally need to connect to the transmission grid. The lack of available capacity on the transmission grid could substantially impact our projects and cause reductions in project size, delays in project implementation, increases in costs from transmission upgrades, and potential forfeitures of any deposit we have made with respect to a given project. In addition, there could be unexpected costs required to complete transmission and network upgrades that adversely impact the economic viability of our PV solar power systems. These transmission and network issues and costs, as well as issues relating to the availability of large equipment such as transformers and switch gear, could significantly impact our ability to interconnect our systems to the transmission grid, build such systems and generate solar electricity sales.

Our systems business is largely dependent on us and third parties arranging financing from various sources, which may not be available or may only be available on unfavorable terms or in insufficient amounts.

The construction of large utility-scale solar power projects in many cases requires project financing, including non-recourse project debt financing in the bank loan market and institutional debt capital markets. Uncertainties exist as to whether our planned projects will be able to access the debt markets in a magnitude sufficient to finance their construction. If we are unable to arrange such financing or if it is only available on unfavorable terms, we may be unable to fully execute our systems business plan. In addition, we generally expect to sell interests in our projects by raising project equity capital from tax-oriented, strategic industry, and other equity investors. Such equity sources may not be available or may only be available in insufficient amounts or on unfavorable terms, in which case our ability to sell interests in our projects may be delayed or limited, and our business, financial condition, and results of operations may be adversely affected. Uncertainty in or adverse changes to tax policy, including the amount of ITC, accelerated depreciation and marginal corporate tax rate may reduce project value or negatively affect our ability to timely secure equity investment for our projects. Even if such financing sources are available, the counterparty to many of our fixed-price EPC contracts, which own the project we are constructing, are often special purpose vehicles that do not have significant assets other than their interests in the project and have pledged all or substantially all of these assets to secure the project-related debt and certain other sources of financing. If the owner defaults on its payments or other obligations to us, we may face difficulties in collecting payment of amounts due to us for the costs previously incurred or for the amounts previously expended or committed to be expended to purchase equipment or supplies (including intercompany purchases of PV modules), or for termination payments we are entitled to under the terms of the related EPC contract. If we are unable to collect the amounts owed to us, or are unable to complete the project because of an owner default, we may be required to record a charge against earnings related to the project, which could result in a material loss.

In addition, for projects to which we provide EPC services but are not the project developer, our EPC activities are in many cases dependent on the ability of third parties to finance their system projects on acceptable terms. Depending on prevailing conditions in the credit markets, interest rates and other factors, such financing may not be available or may only be available on unfavorable terms or in insufficient amounts. If third parties are limited in their ability to access financing to support their purchase of PV solar power system construction services from us, we may not realize the cash flows that we expect from such sales, which could adversely affect our ability to invest in our business and/or generate revenue. See also the Risk Factor above entitled "An increase in interest rates or tightening of the supply of capital in the global financial markets (including a reduction in total tax equity availability) could make it difficult for customers to finance the cost of a PV solar power system and could reduce the demand for our modules or systems and/or lead to a reduction in the average selling price for such offerings."

Developing solar power projects may require significant upfront investment prior to the signing of an EPC contract and commencing construction, or the signing of a module sale agreement, which could adversely affect our business and results of operations.

Our solar power project development cycles, which span the time between the identification of a site location and the construction of a system, vary substantially and can take years to mature. As a result of these long project development cycles, we may need to make significant up-front investments of resources (including, for example, payments for land rights, large transmission and PPA deposits, or other payments, which may be non-refundable) in advance of the signing of EPC contracts, commencing construction, the signing of a module sale agreement, receiving cash proceeds, or recognizing any revenue, which may not be recognized for several additional months or years following

contract signing. Our potential inability to enter into sales contracts with potential customers on favorable terms after making such upfront investments could cause us to forfeit certain nonrefundable payments or otherwise adversely affect our business and results of operations. Furthermore, we may become constrained in our ability to simultaneously fund our other business operations and these systems investments through our long project development cycles.

Our liquidity may also be adversely affected to the extent the project sales market weakens and we are unable to sell interests in our solar projects on pricing, timing, and other terms commercially acceptable to us. In such a scenario, we may choose to continue to temporarily own and operate certain solar projects for a period of time, after which interests in the projects may be sold to third parties.

We may be unable to accurately estimate costs under fixed-price EPC agreements in which we act as the general contractor for our customers in connection with the construction and installation of their PV solar power systems.

We may enter into fixed-price EPC contracts in which we act as the general contractor for our customers in connection with the installation of their PV solar power systems. All essential costs are estimated at the time of entering into the EPC contract for a particular project, and these are reflected in the overall fixed-price that we charge our customers for the project. These cost estimates are preliminary and may or may not be covered by contracts between us or the subcontractors, suppliers, and other parties to the project. In addition, we require qualified, licensed subcontractors to install many of our systems. Shortages of such skilled labor could significantly delay a project or otherwise increase our costs. Should actual results prove different from our estimates (including those due to unexpected increases in inflation, commodity prices, or labor costs) or we experience delays in execution and we are unable to commensurately increase the EPC sales price, we may not achieve our expected margins or we may be required to record a loss in the relevant fiscal period.

We may be subject to unforeseen costs, liabilities, or obligations when providing O&M services. In addition, certain of our O&M agreements include provisions permitting the counterparty to terminate the agreement without cause.

We may provide ongoing O&M services to system owners under separate service agreements, pursuant to which we generally perform standard activities associated with operating a PV solar power system, including 24/7 monitoring and control, compliance activities, energy forecasting, and scheduled and unscheduled maintenance. Our costs to perform these services are estimated at the time of entering into the O&M agreement for a particular project, and these are reflected in the price we charge our customers, including certain agreements which feature fixed pricing. Should our estimates of O&M costs prove inaccurate (including any unexpected increases in inflation, labor, or BoS costs), our growth strategy and results of operations could be adversely affected. Because of the potentially long-term nature of these O&M agreements, the adverse impacts on our results of operations could be significant, particularly if our costs are not capped under the terms of the agreements. In addition, certain of our O&M agreements include provisions permitting the counterparty to terminate the agreement without cause or for convenience. The exercise of such termination rights, or the use of such rights as leverage to re-negotiate terms and conditions of the O&M agreement, including pricing terms, could adversely impact our results of operations. We may also be subject to substantial costs in the event we do not achieve certain thresholds under the effective availability guarantees included in our O&M agreements.

Our systems business is subject to regulatory oversight and liability if we fail to operate our PV solar power systems in compliance with electric reliability rules.

The ongoing O&M services that we provide for system owners may subject us to regulation by the NERC, or its designated regional representative, as a "generator operator," or "GOP," under electric reliability rules filed with FERC. Our failure to comply with the reliability rules applicable to GOPs could subject us to substantial fines by NERC, subject to FERC's review. In addition, the system owners that receive our O&M services may be regulated by NERC as "generator owners," or "GOs" and we may incur liability for GO violations and fines levied by NERC, subject to FERC's review, based on the terms of our O&M agreements. Finally, as a system owner and operator, we may in the future be subject to regulation by NERC as a GO.

Other Risks

We may not realize the anticipated benefits of past or future business combinations or transactions, and integration of these business combinations may disrupt our business and management.

We have made several acquisitions in prior years and in the future we may acquire additional companies, project pipelines, products, or technologies or enter into joint ventures or other strategic initiatives. We may not realize the anticipated benefits of such business combinations or other investments, and each transaction has numerous risks. These risks include the following:

- difficulty in assimilating the operations and personnel of the acquired or partner company;
- difficulty in effectively integrating the acquired products or technologies with our current products or technologies;
- difficulty in achieving profitable commercial scale from acquired technologies;
- difficulty in maintaining controls, procedures, and policies during the transition and integration;
- disruption of our ongoing business and distraction of our management and associates from other opportunities and challenges due to integration issues;
- difficulty integrating the acquired or partner company's accounting, management information, and other administrative systems;
- difficulty managing joint ventures with our partners, potential litigation with joint venture partners, and reliance upon joint ventures which we do not control; for example, our ability to effectively manage 8point3 Energy Partners, LP (the "YieldCo" or the "Partnership"), the limited partnership formed with SunPower Corporation ("SunPower" and together with First Solar, the "Sponsors");
- inability to retain key technical and managerial personnel of the acquired business;
- inability to retain key customers, vendors, and other business partners of the acquired business;
- inability to achieve the financial and strategic goals for the acquired and combined businesses, as a result of insufficient capital resources or otherwise;
- incurring acquisition-related costs or amortization costs for acquired intangible assets that could impact our operating results;
- potential impairment of our relationships with our associates, customers, partners, distributors, or third-party providers of products or technologies;
- potential failure of the due diligence processes to identify significant issues with product quality, legal and financial liabilities, among other things;

- potential inability to assert that internal controls over financial reporting are effective;
- potential inability to obtain, or obtain in a timely manner, approvals from governmental authorities, which could delay or prevent such acquisitions; and
- potential delay in customer purchasing decisions due to uncertainty about the direction of our product offerings.

Mergers and acquisitions of companies are inherently risky, and ultimately, if we do not complete the integration of acquired businesses successfully and in a timely manner, we may not realize the anticipated benefits of the acquisitions to the extent anticipated, which could adversely affect our business, financial condition, or results of operations.

We may not be able to achieve the full strategic and financial benefits expected to result from the formation of 8point3 Energy Partners LP, on a timely basis or at all.

In June 2015, the Partnership formed by the Sponsors completed its initial public offering (the "IPO"). The YieldCo is a joint venture vehicle into which we and SunPower each contributed a portfolio of selected solar generation assets from our existing portfolios of assets. Since the formation of the Partnership, we and SunPower have, from time to time, continued to sell interests in solar projects to the Partnership. We launched the YieldCo to enable a competitive cost of capital and greater optionality in the project sales process for a portion of our future project interest sales. Given the broader economic factors currently impacting the yieldco sector in general, including yieldco equity valuations generally, the timing and execution of project sales to the Partnership are subject to market conditions. We believe that the viability of the YieldCo strategy will depend on, among other things, such market conditions, the YieldCo's ability to finance project interest acquisitions, and our ability to continue to develop revenue-generating solar assets, which is subject to the same project-level, business, and industry risks described in the other Risk Factors and elsewhere in this Annual Report on Form 10-K. The viability of the YieldCo strategy is also subject to the risks described in the YieldCo's Annual Report on Form 10-K. In addition, due to the joint venture nature of the YieldCo, we do not exercise control over the YieldCo in the same manner that we could over our wholly-owned subsidiaries, and, as such, the viability of the YieldCo strategy will also depend in part on our ability to effectively manage our business relationships with SunPower. Furthermore, the value of our investment in the YieldCo will fluctuate over time and may decline. As a result, we may never recover the value of the assets we contributed to the YieldCo, and we may realize less of a return on such contributions than if we had retained or operated the assets. In addition, our stock price may be impacted by fluctuations in the price of YieldCo shares and market perceptions about the value of our interest in the YieldCo. If we are unable to achieve the strategic and financial benefits expected to result from the YieldCo strategy, we would pursue traditional and other pathways in the project sales process, but our business, financial condition, and results of operations could be materially adversely affected. See Note 12 "Investments in Unconsolidated Affiliates and Joint Ventures" to our consolidated financial statements included in this Annual Report on Form 10-K for additional information regarding the Partnership.

Our future success depends on our ability to retain our key associates and to successfully integrate them into our management team.

We are dependent on the services of our executive officers and other members of our senior management team. The loss of one or more of these key associates or any other member of our senior management team could have a material adverse effect on our business. We may not be able to retain or replace these key associates and may not have adequate succession plans in place. Several of our current key associates including our executive officers are subject to employment conditions or arrangements that contain post-employment non-competition provisions. However, these arrangements permit the associates to terminate their employment with us upon little or no notice and the enforceability of the non-competition provisions in certain jurisdictions is uncertain.

If we are unable to attract, train, and retain key personnel, our business may be materially and adversely affected; any regulatory compliance failure with respect to applicable labor laws and regulations, including the Davis-Bacon and Related Acts, could have an adverse effect on us.

Our future success depends, to a significant extent, on our ability to attract, train, and retain management, operations, sales, training, and technical personnel, including in foreign jurisdictions. Recruiting and retaining capable personnel, particularly those with expertise in the PV industry across a variety of technologies, are vital to our success. There is substantial competition for qualified technical personnel and while we continue to benchmark our organization against the broad spectrum of business in our market space to remain economically competitive, there can be no assurances that we will be able to attract and retain our technical personnel. If we are unable to attract and retain qualified associates, or otherwise experience unexpected labor disruptions within our business, we may be materially and adversely affected.

Labor used on some of our job sites that are completed or under construction are subject to the Davis-Bacon and Related Acts (collectively, "Davis-Bacon"). Davis-Bacon requires that personnel assigned to the project be paid at least the prevailing wage and fringe benefits, as established by and in accordance with the regulations promulgated by the U.S. Department of Labor ("DOL"). We have an established policy pursuant to which we evaluate Davis-Bacon requirements in conjunction with our subcontractors on the project and ensure our collective compliance with these requirements. If it was ultimately determined that any person working under Davis-Bacon requirements on First Solar projects was not properly classified, was being paid the incorrect prevailing wage, or had not been paid fringe benefits to which he or she was entitled, we could incur additional liability with respect to such worker or be exposed to other adverse outcomes. For example, in March 2015, the Wage and Hour Division of the DOL notified our wholly-owned subsidiary First Solar Electric, LLC ("FSE") of the DOL's findings following a labor standards compliance review under Davis-Bacon at the Agua Caliente project in southwestern Arizona. FSE served as the general contractor for the project. The DOL alleges that certain workers at the project were misclassified and, as a result of that misclassification, were not paid the required prevailing wage. We disagree with certain of the DOL's investigative findings and are currently reviewing those issues of disagreement with the DOL. Possible adverse outcomes include the payment of back wages to certain project workers. We do not expect the outcome of the DOL proceeding to have a material adverse effect on our business, financial condition, or results of operations.

We may be exposed to infringement or misappropriation claims by third parties, which, if determined adversely to us, could cause us to pay significant damage awards or prohibit us from the manufacture and sale of our solar modules or the use of our technology.

Our success depends largely on our ability to use and develop our technology and know-how without infringing or misappropriating the intellectual property rights of third parties. The validity and scope of claims relating to PV technology patents involve complex scientific, legal, and factual considerations and analysis and, therefore, may be highly uncertain. We may be subject to litigation involving claims of patent infringement or violation of intellectual property rights of third parties. The defense and prosecution of intellectual property suits, patent opposition proceedings, and related legal and administrative proceedings can be both costly and time consuming and may significantly divert the efforts and resources of our technical and management personnel. An adverse determination in any such litigation or proceedings to which we may become a party could subject us to significant liability to third parties, require us to seek licenses from third parties, which may not be available on reasonable terms, or at all, or pay ongoing royalties, require us to redesign our solar modules, or subject us to injunctions prohibiting the manufacture and sale of our solar modules or the use of our technologies. Protracted litigation could also result in our customers or potential customers deferring or limiting their purchase or use of our solar modules until the resolution of such litigation.

Currency translation and transaction risk may negatively affect our results of operations.

Although our reporting currency is the U.S. dollar, we conduct certain business and incur costs in the local currency of most countries in which we operate. As a result, we are subject to currency translation and transaction risk. For example, certain of our net sales in 2016 were denominated in foreign currencies, such as Euros, Australian dollars, and Indian rupees, and we expect to continue to have net sales denominated in foreign currencies in the future. In addition, our operating expenses for our manufacturing plants located outside the United States and our operations for our systems business in foreign countries will generally be denominated in local currencies. Joint ventures or other business arrangements with strategic partners outside of the United States have involved, and are expected in the future to involve, significant investments denominated in local currencies. Changes in exchange rates between foreign currencies and the U.S. dollar could affect our results of operations and result in exchange gains or losses. We cannot accurately predict the impact of future exchange rate fluctuations on our results of operations.

We could also expand our business into emerging markets, many of which have an uncertain regulatory environment relating to currency policy. Conducting business in such emerging markets could cause our exposure to changes in exchange rates to increase, due to the relatively high volatility associated with emerging market currencies and potentially longer payment terms for our proceeds.

Our ability to hedge foreign currency exposure is dependent on our credit profile with the banks that are willing and able to do business with us. Deterioration in our credit position or a significant tightening of the credit market conditions could limit our ability to hedge our foreign currency exposures; and therefore, result in exchange gains or losses.

Sustained declines in worldwide oil prices could adversely affect trading prices of our common shares.

Worldwide oil prices have declined over the last few years and may continue to decline or remain low. Oil is used as a fuel for electricity generation in only a small percentage of applications worldwide, compared to natural gas or coal-fired electricity generation and other forms of electricity generation, and accordingly, fluctuations in oil prices generally do not have a significant direct causal effect on prevailing competitive electricity prices, including electricity from solar sources. Nonetheless, there can be an observed market correlation effect between declining oil prices and depressed equity valuations of solar companies. If oil prices remain low or continue to decline, the trading price of our common shares may suffer.

We are subject to litigation risks, including securities class actions and stockholder derivative actions, which may be costly to defend and the outcome of which is uncertain.

From time to time, we are subject to legal claims, with and without merit, that may be costly and which may divert the attention of our management and our resources in general. In addition, our projects may be subject to litigation or other adverse proceedings that may adversely impact our ability to proceed with construction or sell a given project, which may adversely affect our ability to recognize revenue with respect to such project. The results of complex legal proceedings are difficult to predict. Moreover, many of the complaints filed against us do not specify the amount of damages that plaintiffs seek, and we therefore are unable to estimate the possible range of damages that might be incurred should these lawsuits be resolved against us. Certain of these lawsuits assert types of claims that, if resolved against us, could give rise to substantial damages, and an unfavorable outcome or settlement of one or more of these lawsuits, or any future lawsuits, may result in a significant monetary judgment or award against us or a significant monetary payment by us, and could have a material adverse effect on our business, financial condition, or results of operations. Even if these lawsuits, or any future lawsuits, are not resolved against us, the costs of defending such lawsuits may be significant and may not be covered by our insurance policies. Because the price of our common stock has been, and may

continue to be, volatile, we can provide no assurance that additional securities or other litigation will not be filed against us in the future. For more information on our legal proceedings, including our securities class action and derivative actions, see "Note 16 "Commitments and Contingencies" under the heading "Legal Proceedings" of our consolidated financial statements included in this Annual Report on Form 10-K.

Our largest stockholder has significant influence over us and its interests may conflict with or differ from interests of other stockholders.

Our largest stockholder, Lukas T. Walton (the "Significant Stockholder"), owned approximately 22% of our outstanding common stock at December 31, 2016. As a result, the Significant Stockholder has substantial influence over all matters requiring stockholder approval, including the election of our directors and the approval of significant corporate transactions such as mergers, tender offers, and the sale of all or substantially all of our assets. The interests of the Significant Stockholder could conflict with or differ from interests of other stockholders. For example, the concentration of ownership held by the Significant Stockholder could delay, defer, or prevent a change of control of our company or impede a merger, takeover, or other business combination, which other stockholders may view favorably.

If our goodwill, long-lived assets, or project related assets become impaired, we may be required to record a significant charge to earnings.

We may be required to record a significant charge to earnings should we determine that our goodwill, long-lived assets, or project related assets are impaired. Such a charge may have a material impact on our financial position and results of operations. During the year ended December 31, 2016, we recorded significant impairment charges associated with the end of our crystalline silicon module manufacturing operations and expected transition to Series 6 module manufacturing as discussed further in Note 4 "Restructuring and Asset Impairments" to our consolidated financial statements included in this Annual Report on Form 10-K.

As required by accounting rules, we review our goodwill for impairment at least annually in the fourth quarter or more frequently if facts and circumstances indicate that it is more likely than not that the fair value of a reporting unit that has goodwill is less than its carrying value. Factors that may be considered a change in circumstances indicating that the carrying value of our goodwill might not be recoverable include a deterioration in general economic conditions, a deterioration in the environment in which we operate, declines in our actual or projected financial performance, certain company-specific events, or a sustained decrease in our stock price and market capitalization. We review long-lived and project related assets for impairment whenever events or changes in business circumstances arise that may indicate that the carrying amount of such assets may not be recoverable. We consider a project commercially viable and recoverable if it is anticipated to be sellable for a profit once it is either fully developed or constructed or if the expected operating cash flows from future power generation exceed the cost basis of the asset. If our projects are not considered commercially viable, we would be required to impair the respective assets.

Unanticipated changes in our tax provisions, the enactment of new tax legislation, or exposure to additional income tax liabilities could affect our profitability.

We are subject to income taxes in the jurisdictions in which we operate. Our tax liabilities are affected by the amounts we charge for our modules, systems, services, licenses, funding, and intercompany transactions. We are subject to potential tax examinations in various jurisdictions, and taxing authorities may disagree with our interpretations of U.S. and foreign tax laws and may assess additional taxes. We regularly assess the likely outcomes of these examinations in order to determine the appropriateness of our tax provision; however, the outcome of tax examinations cannot be

predicted with certainty. Therefore, the amounts ultimately paid upon resolution of such examinations could be materially different from the amounts previously included in our income tax provision, which could have a material impact on our results of operations and cash flows. In addition, our future effective tax rate could be adversely affected by changes to our operating structure, losses of tax holidays, changes in the mix of earnings in countries with tax holidays or differing statutory tax rates, changes in the valuation of deferred tax assets and liabilities, changes in tax laws, and the discovery of new information in the course of our tax return preparation process. A number of proposals for broad reform of the corporate tax system in the United States are under evaluation by various legislative and administrative bodies, but it is not possible to accurately determine the overall impact of such proposals on our effective tax rate at this time. Changes in tax laws or regulations, including multijurisdictional changes enacted in response to the guidelines provided by the Organization for Economic Co-operation and Development to address base erosion and profit sharing, may also increase tax uncertainty and adversely affect our results of operations.

Cyber attacks or other breaches of our information systems, or those of third parties with which we do business, could have a material adverse effect on our financial condition and results of operations.

Our operations rely on our computer systems, hardware, software, and networks, as well as those of the third parties with which we do business, to securely process, store, and transmit proprietary, confidential, and other information, including intellectual property. Such information systems may be compromised by cyber attacks, computer viruses, and other events that could be materially disruptive to our business operations and could put the security of our information, and that of the third parties with which we do business, at risk of misappropriation or destruction. In recent years, such cyber incidents have become increasingly frequent and sophisticated, targeting or otherwise affecting a wide range of companies. While we have instituted security measures to minimize the likelihood and impact of a cyber incident, there is no assurance that these measures, or those of the third parties with which we do business, will be adequate in the future. If these measures fail, valuable information may be lost, our manufacturing, development, construction, O&M, and other operations may be disrupted, and our reputation may suffer. We may also be subject to litigation, regulatory action, remedial expenses, and financial losses beyond the scope or limits of our insurance coverage. These consequences of a failure of security measures could, individually or in the aggregate, have a material adverse effect on our financial condition and results of operations.

Changes in, or any failure to comply with, privacy laws, regulations, and standards may adversely affect our business.

Personal privacy and data security have become significant issues in the United States, Europe, and in many other jurisdictions in which we operate. The regulatory framework for privacy and security issues worldwide is rapidly evolving and is likely to remain uncertain for the foreseeable future. For example, in 2015 the Court of Justice of the European Union ruled that the U.S.-EU Safe Harbor framework, which provided U.S. companies with a streamlined means of complying with the European Union's Data Protection Directive regarding the treatment of customers' and employees' personal information and other privacy matters, and upon which we relied for the transfer of personal data from the EU to the U.S., was invalid. As a result of such invalidation, we have been required to implement data transfer agreements between certain of our U.S. and EU based entities. Furthermore, federal, state, or foreign government bodies or agencies have in the past adopted, and may in the future adopt, laws and regulations affecting data privacy, all of which may be subject to invalidation by relevant foreign judicial bodies. Industry organizations also regularly adopt and advocate for new standards in this area. In the United States, these include rules and regulations promulgated under the authority of federal agencies and state attorneys general and legislatures and consumer protection agencies. Internationally, many jurisdictions in which we operate have established their own data security and privacy legal framework with which we or our customers must comply, including but not limited to, the

Data Protection Directive established in the European Union and data protection legislation of the individual member states subject to such directive. The Data Protection Directive will be replaced in 2018 with the pending European General Data Protection Regulation, which will impose additional obligations, penalties and risk upon our business. In many jurisdictions, enforcement actions and consequences for noncompliance are also rising. In addition to government regulation, privacy advocates and industry groups may propose new and different self-regulatory standards that either legally or contractually apply to us. Any inability or perceived inability to adequately address privacy and security concerns, even if unfounded, or comply with applicable privacy and data security laws, regulations, and policies, could result in additional cost and liability to us, damage our reputation, inhibit sales, and adversely affect our business.

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

We may be unable to respond to changes in business and economic conditions, engage in transactions that might otherwise be beneficial to us, and obtain additional financing, if needed, because the senior secured credit facility made available under our amended and restated credit agreement with several financial institutions as lenders and JPMorgan Chase Bank, N.A. as administrative agent (the "Revolving Credit Facility") and certain of our project financing arrangements contain, and other future debt agreements may contain, covenant restrictions that limit our ability to, among other things:

- incur additional debt, assume obligations in connection with letters of credit, or issue guarantees;
- create liens;
- enter into certain transactions with our affiliates;
- sell certain assets; and
- declare or pay dividends, make other distributions to stockholders, or make other restricted payments.

Under our Revolving Credit Facility and certain of our project financing arrangements, we are also subject to certain financial covenants. Our ability to comply with covenants under our credit agreements is dependent on our future performance or the performance of specifically financed projects, which will be subject to many factors, some of which are beyond our control, including prevailing economic conditions. In addition, our failure to comply with these covenants could result in a default under these agreements and any of our other future debt agreements, which if not cured or waived, could permit the holders thereof to accelerate such debt and could cause cross-defaults under our other facility agreements and the possible acceleration of debt under such other facility agreements, as well as cross-defaults under certain of our key project and operational agreements and could also result in requirements to post additional security instruments to secure future obligations. In addition, we cannot assure you that events that occur within the Company, or in the industry or the economy as a whole, will not constitute material adverse effects under these agreements. If it is determined that a material adverse effect has occurred, the lenders can, under certain circumstances, restrict future borrowings or accelerate the due date of outstanding loan balances. If any of our debt is accelerated, we may not have sufficient funds available to repay such debt and may experience cross-defaults under our other debt agreements or project and key operational agreements, which could materially and negatively affect our business, financial condition, and results of operations.

Item 1B. ***Unresolved Staff Comments***

None.

Item 2. *Properties*

As of December 31, 2016, our principal properties consisted of the following:

Nature	Primary Segment(s) Using Property	Location	Held
Manufacturing plant, research and development facility, and administrative offices	Components	Perrysburg, Ohio, United States	Own
Manufacturing plant and administrative offices	Components	Kulim, Kedah, Malaysia	Lease land, own buildings
Administrative offices	Components & Systems	Georgetown, Penang, Malaysia	Lease
Manufacturing plant(1)	Components	Frankfurt/Oder, Germany	Own
Manufacturing plant(2)	Components	Ho Chi Minh City, Vietnam	Lease land, own buildings
Corporate headquarters	Components & Systems	Tempe, Arizona, United States	Lease
Administrative offices	Systems	San Francisco, California, United States	Lease
Research and development facility	Components & Systems	Santa Clara, California, United States	Lease

(1) Manufacturing ceased in December 2012, and such property is being actively marketed for sale.

(2) Although we did not proceed with our previously announced manufacturing plant in Vietnam, we continue to evaluate potential uses for the unfinished facility, including its use in future manufacturing capacity expansions.

In addition, we lease small amounts of office and warehouse space in several other U.S. and international locations.

Item 3. *Legal Proceedings*

In the ordinary conduct of our business, we are subject to periodic lawsuits, investigations, and claims, including, but not limited to, routine employment matters. Although we cannot predict with certainty the ultimate resolution of lawsuits, investigations, and claims asserted against us, we do not believe that any currently pending legal proceeding to which we are a party will have a material adverse effect on our business, financial condition, results of operations, or cash flows.

See Note 16 "Commitments and Contingencies" under the heading "Legal Proceedings" of our consolidated financial statements for the year ended December 31, 2016 included in this Annual Report on Form 10-K for information regarding legal proceedings and related matters.

Item 4. *Mine Safety Disclosures*

None.

PART II

Item 5. ***Market for Registrant's Common Equity, Related Stockholder Matters, and Issuer Purchases of Equity Securities***

Price Range of Common Stock

Our common stock has been listed on The NASDAQ Global Select Market under the symbol "FSLR" since November 17, 2006. Prior to this time, there was no public market for our common stock. The following table sets forth the range of high and low closing prices per share as reported on The NASDAQ Global Select Market for the periods indicated:

	High	Low
Fiscal year 2016		
First quarter	$73.21	$60.99
Second quarter	$67.48	$44.23
Third quarter	$49.24	$34.00
Fourth quarter	$42.25	$29.21
Fiscal year 2015		
First quarter	$62.52	$39.83
Second quarter	$64.75	$46.98
Third quarter	$53.48	$40.81
Fourth quarter	$66.99	$42.68

The closing price of our common stock on The NASDAQ Global Select Market was $34.84 per share on February 17, 2017. As of February 17, 2017, there were 49 record holders of our common stock, which does not reflect the beneficial ownership of shares held in nominee names.

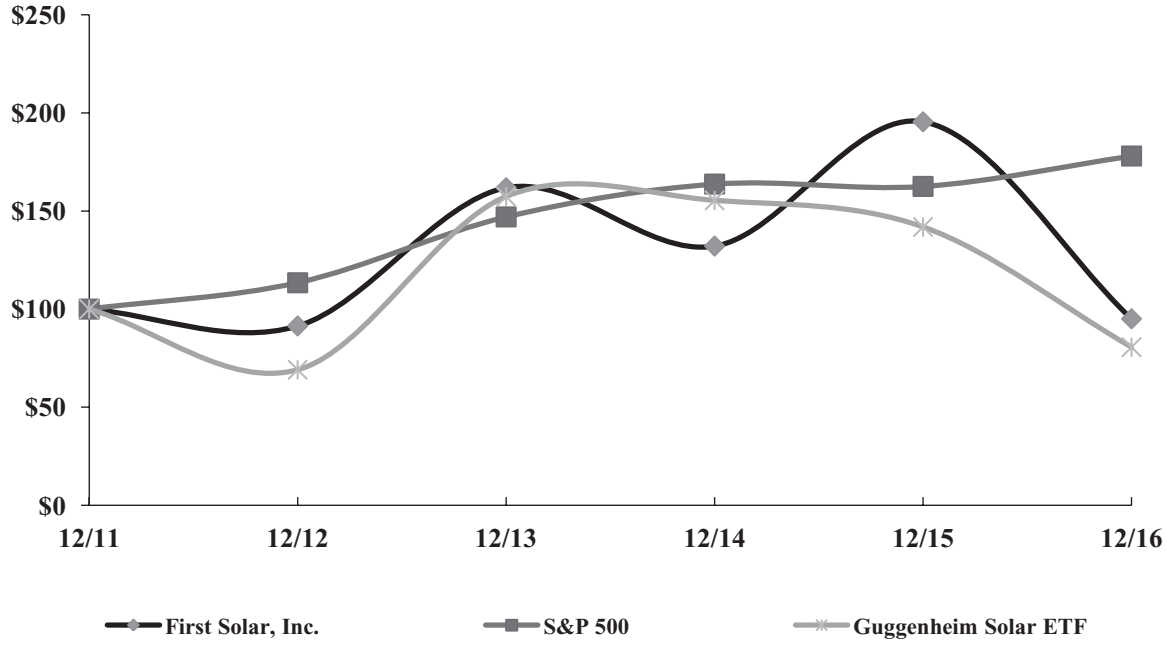
Dividend Policy

We have never paid, and it is our present intention for the foreseeable future not to pay, dividends on our common stock. Our Revolving Credit Facility imposes restrictions on our ability to declare or pay dividends. The declaration and payment of dividends is subject to the discretion of our board of directors and depends on various factors, including the continued applicability of the above-referenced restrictions under our Revolving Credit Facility, our net income, financial condition, cash requirements, future prospects, and other factors considered relevant by our board of directors.

Stock Price Performance Graph

The following graph compares the five-year cumulative total return on our common stock relative to the cumulative total returns of the S&P 500 Index and the Guggenheim Solar ETF, which represents a peer group of solar companies. In the stock price performance graph included below, an investment of $100 (with reinvestment of all dividends) is assumed to have been made in our common stock, the S&P 500 Index, and the Guggenheim Solar ETF on December 31, 2011, and its relative performance is tracked through December 31, 2016. No cash dividends have been declared on shares of our common stock. This performance graph is not "soliciting material," is not deemed filed with the SEC, and is not to be incorporated by reference in any filing by us under the Securities Act or the Exchange Act, whether made before or after the date hereof, and irrespective of any general incorporation language in any such filing. The stock price performance shown on the graph represents past performance and should not be considered an indication of future price performance.

COMPARISON OF FIVE-YEAR CUMULATIVE TOTAL RETURN*
Among First Solar, the S&P 500 Index,
and the Guggenheim Solar ETF



* $100 invested on December 31, 2011 in stock or index, including reinvestment of dividends. Index calculated on a month-end basis.

Recent Sales of Unregistered Securities

None.

Purchases of Equity Securities by the Issuer and Affiliate Purchases

None.

Item 6. ***Selected Financial Data***

The following tables set forth our selected financial data for the periods and at the dates indicated. The selected financial data from the consolidated statements of operations and consolidated statements of cash flows for the years ended December 31, 2016, 2015, and 2014 and the selected financial data from the consolidated balance sheets as of December 31, 2016 and 2015 have been derived from the audited consolidated financial statements included in this Annual Report on Form 10-K. The selected financial data from the consolidated balance sheets as of December 31, 2014, 2013, and 2012 and selected financial data from the consolidated statements of operations and consolidated statements of cash flows for the years ended December 31, 2013 and 2012 have been derived from audited consolidated financial statements not included in this Annual Report on Form 10-K. The information presented below should also be read in conjunction with Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our consolidated financial statements and the related notes thereto.

For the years ended December 31, 2015 and 2014, we have recast certain of the following cash flow financial data as a result of the adoption of ASU 2016-09. See Note 3 "Recent Accounting

Pronouncements" to our consolidated financial statements for the year ended December 31, 2016 included in this Annual Report on Form 10-K for further information regarding these changes.

	Years Ended				
	December 31, 2016	December 31, 2015	December 31, 2014	December 31, 2013	December 31, 2012
	(In thousands, except per share amounts)				
Net sales	$2,951,328	$3,578,995	$3,391,187	$3,309,616	$3,354,920
Gross profit	703,979	919,267	824,941	864,632	847,820
Operating (loss) income	(502,590)	516,664	421,999	370,407	(42,933)
Net (loss) income	(357,964)	546,421	395,964	350,718	(106,909)
Net (loss) income per share:					
Basic	$ (3.48)	$ 5.42	$ 3.96	$ 3.74	$ (1.23)
Diluted	$ (3.48)	$ 5.37	$ 3.90	$ 3.67	$ (1.23)
Cash dividends declared per common share	$ —	$ —	$ —	$ —	$ —
Net cash provided by (used in) operating activities	$ 206,753	$ (325,209)	$ 735,516	$ 856,126	$ 762,209
Net cash provided by (used in) investing activities	144,520	(156,177)	(387,818)	(537,106)	(383,732)
Net cash (used in) provided by financing activities	(136,393)	101,207	(46,907)	101,164	(89,109)

	December 31, 2016	December 31, 2015	December 31, 2014	December 31, 2013	December 31, 2012
	(In thousands)				
Cash and cash equivalents	$1,347,155	$1,126,826	$1,482,054	$1,325,072	$ 901,294
Marketable securities	607,991	703,454	509,032	439,102	102,578
Total assets	6,867,213	7,316,331	6,720,991	6,876,586	6,356,975
Total long-term debt	188,388	289,415	213,473	223,323	562,572
Total liabilities	1,654,526	1,767,844	1,729,504	2,408,516	2,783,681
Total stockholders' equity	5,212,687	5,548,487	4,991,487	4,468,070	3,573,294

Item 7. ***Management's Discussion and Analysis of Financial Condition and Results of Operations***

The following discussion and analysis of our financial condition and results of operations should be read in conjunction with our consolidated financial statements and the related notes thereto included in this Annual Report on Form 10-K. Unless expressly stated or the context otherwise requires, the terms "First Solar," "the Company," "we," "us," and "our" refer to First Solar, Inc. and its consolidated subsidiaries. In addition to historical consolidated financial information, the following discussion and analysis contains forward-looking statements that involve risks, uncertainties, and assumptions as described under the "Note Regarding Forward-Looking Statements" that appears earlier in this Annual Report on Form 10-K. Our actual results could differ materially from those anticipated by these forward-looking statements as a result of many factors, including those discussed under Item 1A. "Risk Factors," and elsewhere in this Annual Report on Form 10-K.

Executive Overview

We are a leading global provider of comprehensive PV solar energy solutions. We design, manufacture, and sell PV solar modules with an advanced thin-film semiconductor technology and also develop, design, construct, and sell PV solar power systems that primarily use the modules we manufacture. Additionally, we provide O&M services to system owners that use solar modules

manufactured by us or by third-party manufacturers. We have substantial, ongoing R&D efforts focused on module and system-level innovations. We are the world's largest thin-film PV solar module manufacturer and one of the world's largest PV solar module manufacturers. Our mission is to create enduring value by enabling a world powered by clean, affordable solar energy.

Certain highlights of our financial results and other key operational developments for the year ended December 31, 2016 include the following:

- Net sales for 2016 decreased by 18% to $3.0 billion compared to $3.6 billion in 2015. The decrease in net sales was primarily attributable to the sale of majority interests in the North Star and Lost Hills projects in 2015, the completion of substantially all construction activities on the Imperial Solar Energy Center West and Decatur projects in 2015, the completion of substantially all construction activities on the Silver State South and McCoy projects in the first half of 2016, and lower revenue from "module plus" transactions, which are transactions in which we sell both our modules plus selected BoS parts. This decrease in revenue was partially offset by an increase in the volume of modules sold to third parties, higher revenue from the commencement of construction of the Taylor and Butler projects in late 2015, and the commencement of construction of the East Pecos project in early 2016.
- Gross profit decreased 1.8 percentage points to 23.9% during 2016 from 25.7% during 2015, primarily due to the mix of lower gross profit projects sold and under construction, higher inventory write-downs, and the reduction in our module collection and recycling obligation in 2015 resulting from certain recycling technology advancements, partially offset by the higher gross margins on modules sales to third parties.
- As of December 31, 2016, we had 28 installed production lines at our manufacturing facilities in Perrysburg, Ohio and Kulim, Malaysia. We produced 3.1 GW of solar modules during 2016, which represented a 24% increase from 2015. The increase in production was primarily driven by increased throughput and higher module conversion efficiencies. We expect to produce approximately 2.2 GW of solar modules during 2017 as we ramp down production of our Series 4 modules and continue the transition to Series 6 module manufacturing.
- During 2016, we ran our manufacturing facilities at approximately 97% capacity utilization, which represented a 5.0 percentage point increase from 2015.
- The average conversion efficiency of our modules produced in 2016 was 16.4%, which represented an improvement of 0.8 percentage points from our average conversion efficiency of 15.6% in 2015.

Market Overview

The solar industry continues to be characterized by intense pricing competition, both at the module and system levels. In particular, module average selling prices in the United States and several other key markets have experienced an accelerated decline in recent months, and module average selling prices are expected to continue to decline to some degree in the short and medium terms according to market forecasts. In the aggregate, we believe manufacturers of solar modules and cells have significant installed production capacity, relative to global demand, and the ability for additional capacity expansion. We believe the solar industry may from time to time experience periods of structural imbalance between supply and demand (i.e., where production capacity exceeds global demand), and that such periods will put pressure on pricing. We believe the solar industry is currently in such a period. Additionally, intense competition at the system level may result in an environment in which pricing falls rapidly, thereby further increasing demand for solar energy solutions but constraining the ability for project developers; EPC companies; and vertically-integrated solar companies such as First Solar to sustain meaningful and consistent profitability. In light of such market

realities, we are executing our long term strategic plan, under which we are focusing on our competitive strengths. Such strengths include our advanced module and system technologies as well as our vertically-integrated business model that enables us to provide utility-scale PV solar energy solutions to key markets with current electricity needs.

Worldwide solar markets continue to develop, in part aided by demand elasticity resulting from declining industry average selling prices, both at the module and system level, which make solar power more affordable to new markets. We are developing, constructing, or operating multiple solar projects around the world, many of which are the largest or among the largest in their regions. We continue to execute on our advanced-stage utility-scale project pipeline, which includes the construction of some of the world's largest PV solar power systems. We expect a substantial portion of our consolidated net sales, operating income, and cash flows through the end of 2018 to be derived from these projects. We continue to advance the development and selling efforts for the other projects included in our advanced-stage utility-scale project pipeline, develop our early-to-mid stage project pipeline, and evaluate acquisitions of projects to expand our advanced-stage utility-scale project pipeline. See the tables under "Management's Discussion and Analysis of Financial Condition and Results of Operations—Systems Project Pipeline" for additional information about these and other projects within our systems business advanced-stage project pipeline.

Lower industry module and system pricing, while currently challenging for certain solar manufacturers (particularly manufacturers with high cost structures), is expected to continue to contribute to global market diversification and volume elasticity. Over time, declining average selling prices are consistent with the erosion of one of the primary historical constraints to widespread solar market penetration, its affordability. In the near term, however, declining average selling prices are expected to adversely affect our results of operations relative to prior years. If competitors reduce pricing to levels below their costs, bid aggressively low prices for module sale agreements, EPC agreements, and PPAs, or are able to operate at minimal or negative operating margins for sustained periods of time, our results of operations could be further adversely affected. In certain markets in California and elsewhere, an oversupply imbalance at the grid level may further contribute to reduced short-to-medium term demand for new solar installations relative to prior years, lower PPA pricing, and lower margins on module and systems sales to such markets. We continue to mitigate these uncertainties in part by executing on our module technology improvements, including our transition to Series 6 module manufacturing, continuing the development of key markets, and implementing certain other cost reduction initiatives, including both manufacturing and BoS costs.

We continue to face intense competition from manufacturers of crystalline silicon solar modules and other types of solar modules and PV solar power systems. Solar module manufacturers compete with one another on price and on several module value attributes, including conversion efficiency, energy yield, and reliability, and, with respect to PV solar power systems, net present value, return on equity, and LCOE, meaning the net present value of total life cycle costs of the system divided by the quantity of energy which is expected to be produced over the system's life. As noted above, competition on the basis of selling price per watt has intensified in recent months, resulting in sharp declines in module average selling prices in several key markets. In addition, we believe crystalline silicon cell and wafer manufacturers have begun transitioning from lower efficiency Back Surface Field ("BSF") multi-crystalline cells (the legacy technology against which we generally compete in our markets) to higher efficiency PERC multi-crystalline and mono-crystalline cells at potentially competitive cost structures.

We believe we are among the lowest cost PV module manufacturers in the solar industry on a module cost per watt basis, based on publicly available information. This cost competitiveness is reflected in the price at which we sell our modules and fully integrated PV solar power systems and enables our systems to compete favorably. Our cost competitiveness is based in large part on our module conversion efficiency, proprietary manufacturing technology (which enables us to produce a CdTe module in less than 3.5 hours using a continuous and highly automated industrial manufacturing

process, as opposed to a batch process), and our operational excellence. In addition, our CdTe modules use approximately 1-2% of the amount of the semiconductor material that is used to manufacture traditional crystalline silicon solar modules. The cost of polysilicon is a significant driver of the manufacturing cost of crystalline silicon solar modules, and the timing and rate of change in the cost of silicon feedstock and polysilicon could lead to changes in solar module pricing levels. Polysilicon costs have had periods of decline over the past several years, and polysilicon consumption per cell has been reduced through the adoption of diamond wafer saw technology, contributing to a decline in our relative manufacturing cost competitiveness over traditional crystalline silicon module manufacturers.

Given the smaller size (sometimes referred to as form factor) of our current Series 4 CdTe modules compared to certain types of crystalline silicon modules, we may incur higher labor and BoS costs associated with the construction of systems using our modules. Thus, to compete effectively on an LCOE basis, our Series 4 modules may need to maintain a certain cost advantage per watt compared to crystalline silicon-based modules with larger form factors. We recently introduced our next generation Series 6 module technology, which is expected to enable the production of modules with a larger form factor along with better product attributes and a lower manufacturing cost structure. Accordingly, the larger form factor of our Series 6 modules is expected to reduce the number of electrical connections and hardware required for system installation. The resulting labor and material savings are expected to represent a significant improvement compared to current technologies and a substantial reduction in total installed costs resulting in improved project returns as BoS costs represent a significant portion of the costs associated with the construction of a typical utility-scale system. See Note 4 "Restructuring and Asset Impairments" to our consolidated financial statements for the year ended December 31, 2016 included in this Annual Report on Form 10-K for additional information regarding the transition to Series 6 module manufacturing.

In terms of energy yield, in many climates, our CdTe modules provide a significant energy production advantage over most conventional crystalline silicon solar modules (including BSF and PERC technologies) of equivalent efficiency rating. For example, our CdTe solar modules provide a superior temperature coefficient, which results in stronger system performance in typical high insolation climates as the majority of a system's generation, on average, occurs when module temperatures are well above 25°C (standard test conditions). In addition, our CdTe modules provide a superior spectral response in humid environments where atmospheric moisture alters the solar spectrum relative to laboratory standards. Our CdTe solar modules also provide a better shading response than conventional crystalline silicon solar modules, which may lose up to three times as much power as CdTe solar modules when shading occurs. As a result of these and other factors, our PV solar power systems typically produce more annual energy in real world field conditions than competing systems with the same nameplate capacity.

While our modules and PV solar power systems are generally competitive in cost, reliability, and performance attributes, there can be no guarantee such competitiveness will continue to exist in the future to the same extent or at all. Any declines in the competitiveness of our products could result in additional margin compression, further declines in the average selling prices of our modules and systems, erosion in our market share for modules and systems, decreases in the rate of net sales growth, and/or declines in overall net sales. We continue to focus on enhancing the competitiveness of our solar modules and PV solar power systems by accelerating progress along our module technology and cost reduction roadmaps, continuing to make technological advances at the system level, using innovative installation techniques and know-how, and leveraging volume procurement around standardized hardware platforms. Such procurement efforts include the use of high-quality, conventional BoS components as we have phased out the use of our proprietary trackers and fixed mounting structures to further reduce system costs and streamline our operations.

Certain Trends and Uncertainties

We believe that our operations may be favorably or unfavorably impacted by the following trends and uncertainties that may affect our financial condition and results of operations. See Item 1A. "Risk Factors" and elsewhere in this Annual Report on Form 10-K for a discussion of other risks that may affect our financial condition and results of operations.

Long Term Strategic Plan

Our long term strategic plan is a long-term roadmap to achieve our technology, growth, and cost leadership objectives. In executing our long term strategic plan, we are focusing on providing utility-scale PV solar energy solutions using our modules in key geographic markets that we believe have a compelling need for mass-scale PV electricity, including markets throughout the Americas, the Asia-Pacific region, and the Middle East. As part of our long term strategic plan, we are focusing on opportunities in which our PV solar energy solutions can compete directly with fossil fuel offerings on an LCOE or similar basis, or complement such fossil fuel electricity offerings. Execution of the long term strategic plan entails a prioritization of market opportunities worldwide relative to our core strengths and a corresponding allocation of resources around the globe. This prioritization involves a focus on our core module and utility-scale offerings and exists within a current market environment that includes rooftop and distributed generation solar, particularly in the United States. While it is unclear how rooftop and distributed generation solar might impact our core utility-scale offerings in the next several years, we believe that utility-scale solar will continue to be a compelling solar offering for companies with technology and cost leadership and will continue to represent an increasing portion of the overall electricity generation mix.

We are closely evaluating and managing the appropriate level of resources required as we pursue the most advantageous and cost effective projects and partnerships in our target markets. We have dedicated, and intend to continue to dedicate, significant capital and human resources to reduce the total installed cost of PV solar energy, to optimize the design and logistics around our PV solar energy solutions, and to ensure that our solutions integrate well into the overall electricity ecosystem of each specific market. We expect that, over time, an increasing portion of our consolidated net sales, operating income, and cash flows may come from solar offerings in the key geographic markets described above as we execute on our long term strategic plan. The timing, execution, and financial impacts of our long term strategic plan are subject to risks and uncertainties, as described in Item 1A. "Risk Factors," and elsewhere in this Annual Report on Form 10-K. We are focusing our resources in those markets and energy applications in which solar power can be a least-cost, best-fit energy solution, particularly in regions with high solar resources, significant current or projected electricity demand, and/or relatively high existing electricity prices. As part of these efforts, we continue to optimize resources globally, including business development, sales personnel, and other supporting professional staff in target markets.

Joint ventures or other strategic arrangements with partners are a key part of our long term strategic plan, and we generally use such arrangements to expedite our penetration of various key markets and establish relationships with potential customers. We also enter into joint ventures or strategic arrangements with customers or other entities to maximize the value of particular projects. Some of these arrangements involve and are expected in the future to involve significant investments or other allocations of capital. We continue to develop relationships with customers in these strategic markets with a view to creating opportunities for utility-scale PV solar power systems. We sell such systems directly to end customers, including utilities, independent power producers, commercial and industrial companies, and other system owners. Depending on the market opportunity, our sales offerings may range from module-only sales, to module sales with a range of development, EPC services, and other solutions, to full turn-key PV solar power system sales. We expect these offerings to continue to evolve over time as we work with our customers to optimize how our PV solar energy solutions can best meet our customers' energy and economic needs.

In order to create or maintain a market position in certain strategically targeted markets, our offerings from time to time may need to be competitively priced at levels associated with minimal gross profit margins, which may adversely affect our results of operations. We expect the profitability associated with our various sales offerings to vary from one another over time, and possibly vary from our internal long-range profitability expectations and targets, depending on the market opportunity and the relative competitiveness of our offerings compared with other energy solutions, fossil fuel-based or otherwise, that are available to potential customers. In addition, as we execute on our long term strategic plan, we will continue to monitor and adapt to any changing dynamics in the market set of potential buyers of solar project assets. Market environments with few potential project buyers and a higher cost of capital would generally exert downward pressure on the potential revenue from the uncontracted solar project assets we are developing, whereas, conversely, market environments with many potential project buyers and a lower cost of capital would likely have a favorable impact on the potential revenue from such uncontracted solar project assets.

We expect to use our working capital, project financing arrangements, or availability under our Revolving Credit Facility to finance the construction of certain PV solar power systems for strategic purposes or to maximize the value of such systems at the time of sale. From time to time, we may temporarily own and operate certain PV solar power systems, often with the intention to sell at a later date. We may also elect to construct and temporarily retain ownership interests in systems for which there is no PPA with an off-taker, such as a utility, but rather an intent to sell the electricity produced by the system on an open contract basis until the system is sold. Additionally, our joint ventures and other business arrangements with strategic partners have and may in the future result in us temporarily retaining a noncontrolling ownership interest in the underlying systems projects we develop, supply modules to, or construct potentially for a period of up to several years. Such business arrangements could become increasingly important to our competitive profile in markets globally, including North America. In each of the above mentioned examples, we may retain such ownership interests in a consolidated or unconsolidated separate entity.

We continually evaluate forecasted global demand, competition, and our addressable market, and seek to effectively balance manufacturing capacity with market demand and the nature and extent of our competition. To the extent we make investments to add or otherwise modify our manufacturing capacity in response to market demand and competition, such investments would require significant internal and possibly external sources of liquidity and would be subject to certain risks and uncertainties described in Item 1A. Risk Factors, including those entitled "Our future success depends on our ability to effectively balance manufacturing production with market demand, convert existing production facilities to support new product lines, such as our transition to Series 6 module manufacturing, and, when necessary, continue to build new manufacturing plants over time in response to such demand and add production lines in a cost-effective manner, all of which are subject to risks and uncertainties" and "If any future production lines are not built in line with our committed schedules it may impair any future growth plans. If any future production lines do not achieve operating metrics similar to our existing production lines, our solar modules could perform below expectations and cause us to lose customers."

8point3 Energy Partners LP

In June 2015, the Partnership completed the IPO. As part of the IPO, we contributed interests in various projects to a subsidiary of the Partnership in exchange for an ownership interest in the entity. Since the formation of the Partnership, we and SunPower have, from time to time, continued to sell interests in solar projects to the Partnership. The Partnership owns and operates a portfolio of solar energy generation projects and is expected to acquire additional interests in projects from the Sponsors. In addition, the Partnership is expected to provide the Sponsors with optionality in the project sales process. Given the broader economic factors currently impacting the yieldco sector in general, including

yieldco equity valuations generally, the timing and execution of project sales to the Partnership are subject to market conditions. For additional information, see Item 1A. "Risk Factors—We may not be able to achieve the full strategic and financial benefits expected to result from the formation of 8point3 Energy Partners LP, on a timely basis or at all" and "Note 12 "Investments in Unconsolidated Affiliates and Joint Ventures—8point3 Energy Partners LP" of our consolidated financial statements included in this Annual Report on Form 10-K.

Construction of Some of the World's Largest PV Solar Power Systems

We continue to execute on our advanced-stage utility-scale project pipeline and expect a substantial portion of our consolidated net sales, operating income, and cash flows through the end of 2018 to be derived from several large projects in this pipeline, including the following contracted projects which will be among the world's largest PV solar power systems: the 280 MW California Flats project, located in Monterey County, California; the 250 MW Moapa project, located in Clark County, Nevada; the 150 MW Rosamond project located in Kern County, California; and the 150 MW Sun Streams project, located in Maricopa County, Arizona. Please see the tables under "Management's Discussion and Analysis of Financial Condition and Results of Operations—Systems Project Pipeline" for additional information about these and other projects within our systems business advanced-stage project pipeline. The construction progress of these projects is subject to risks and delays as described in Item 1A. "Risk Factors," and elsewhere in this Annual Report on Form 10-K. Revenue recognition for these and other system projects is in many cases not linear in nature due to the timing of when all revenue recognition criteria are met, and consequently, period-over-period comparisons of results of operations may not be meaningful. Expected revenue from projects without a PPA, for which electricity will be sold on an open contract basis, may be subject to greater variability and uncertainty based on market factors compared to projects with a PPA.

Systems Project Pipeline

The following tables summarize, as of February 22, 2017, our approximately 2.0 GW systems business advanced-stage project pipeline. As of December 31, 2016, for the Projects Sold/Under Contract in our advanced-stage project pipeline of 275 MW, we have not recognized any significant amount of revenue. The remaining revenue to be recognized subsequent to December 31, 2016 for the Projects Sold/Under Contract is expected to be approximately $0.8 billion. The majority of such revenue is expected to be recognized through the later of the substantial completion or closing dates of the projects. The remaining revenue to be recognized does not have a direct correlation to expected remaining module shipments for such Projects Sold/Under Contract as expected module shipments do not represent total systems revenues and do not consider the timing of when all revenue recognition criteria are met, including the timing of module installation. The actual volume of modules installed in our Projects Sold/Under Contract will be greater than the project size in MW AC as module volumes required for a project are based upon MW DC, which will be greater than the MW AC size pursuant to a DC-AC ratio typically ranging from 1.2 to 1.3. Such ratio varies across different projects due to various system design factors. Projects are removed from our advanced-stage project pipeline tables below once we have substantially completed construction and after substantially all revenue has been recognized. Projects, or portions of projects, may also be removed from the tables below in the event an EPC-contracted or partner-developed project does not obtain permitting or financing, an unsold or uncontracted project is not sold or contracted due to the changing economics of the project or other factors, or we decide to temporarily own and operate, or retain interests in, such projects based on strategic opportunities or market factors.

In January 2017, we discontinued development of the 310 MW AC Tribal Solar project. The development of solar energy projects, such as the Tribal Solar project, involves numerous risks, and typically requires developers, such as First Solar, to spend significant sums and devote substantial

resources to a project before a determination can be made whether the project is feasible, economically attractive, or capable of being built. For more information about the risks associated with project development, see Item 1A. "Risk Factors—Project development or construction activities may not be successful; projects under development may not receive required permits, real property rights, PPAs, interconnection, and transmission arrangements; or financing or construction may not commence or proceed as scheduled, which could increase our costs and impair our ability to recover our investments." In light of significant uncertainties and risks related to the land use rights and obtaining the required permits and approvals, among other factors, and our experience developing over 6 GW of solar energy projects, we made the determination that it would not be prudent to continue development of the Tribal Solar project. We therefore notified SCE that we were unwilling to pay the excess costs related to certain transmission upgrades and new transmission facilities, and the PPA was terminated pursuant to its terms. Accordingly, SCE has released to us the full amount of the performance security, and we have ceased development activities related to the Tribal Solar project. As of December 31, 2016, we estimated that the Tribal Solar project was 2% completed and had a likely substantial completion date, if any, in 2021.

We continually seek to make additions to our advanced-stage project pipeline. We are actively developing our early to mid-stage project pipeline in order to secure PPAs and are also pursuing opportunities to acquire advanced-stage projects, which already have PPAs in place. New additions to our project pipeline during the period from February 24, 2016 to February 22, 2017 included a 126 MW AC solar power project in California, 60 MW AC of solar power projects in India, a 49 MW AC solar power project in Australia, 41 MW AC of solar power projects in Japan, a 40 MW AC solar power project in California, and a 25 MW AC solar power project in Honduras.

Projects Sold/Under Contract

(Includes uncompleted sold projects, projects under sales contracts subject to conditions precedent, and EPC agreements including partner developed projects that we will be or are constructing.)

Project/Location	Project Size in MW AC(1)	PPA Contracted Partner	EPC Contract/Partner Developed Project	Expected Year Revenue Recognition Will Be Completed By	As of December 31, 2016	
					Percentage Complete	Percentage of Revenue Recognized
Moapa, Nevada	250	LADWP	(2)	2017	99%	—%
Helios, Honduras	25	ENEE(3)	Grupo Terra	2017	7%	7%
Total	275					

Projects with Executed PPA Not Sold/Not Contracted

Project/Location	Project Size in MW AC(1)	Fully Permitted	PPA Contracted Partner	Expected or Actual Substantial Completion Year	Percentage Complete as of December 31, 2016
California Flats, California	280	No	PG&E/Apple Inc.(4)	2018	45%
India (multiple locations)	250	No	(5)	2016/2017	69%
Rosamond, California	150	Yes	SCE	2018	11%
Sun Streams, Arizona	150	Yes	SCE	2019	4%
Luz del Norte, Chile	141	Yes	(6)	2016	100%
American Kings Solar, California	126	No	SCE	2020	5%
Willow Springs, California	100	Yes	SCE	2018	16%
Sunshine Valley, Nevada	100	Yes	SCE	2019	2%
Switch Station 1, Nevada	100	Yes	Nevada Power Company	2017	45%
Switch Station 2, Nevada	79	Yes	Nevada Power Company / Sierra Pacific Power Company	2017	6%
Ishikawa, Japan	59	Yes	Hokuriku Electric Power Company	2018	13%
Manildra, Australia	49	Yes	EnergyAustralia	2018	1%
Japan (multiple locations)	41	No	Tokyo Electric Power Company	2019/2020	7%
Little Bear, California	40	No	Marin Clean Energy(7)	2020	4%
Miyagi, Japan	40	No	Tohoku Electric Power Company	2018/2019	10%
Cuyama, California	40	Yes	PG&E	2017	30%
Total	1,745				

(1) The volume of modules installed in MW DC will be higher than the MW AC size pursuant to a DC-AC ratio typically ranging from 1.2 to 1.3; such ratio varies across different projects due to various system design factors

(2) Contracted but not specified

(3) ENEE is defined as Empresa Nacional de Energía Eléctrica

(4) PG&E 150 MW AC and Apple Energy, LLC 130 MW AC

(5) Southern Power Distribution Company of Telangana State Ltd—110 MW AC; Andhra Pradesh Southern Power Distribution Company Ltd—80 MW AC; Gulbarga Electricity Supply Co.—20 MW AC; Bengaluru Electricity Supply Co.—20 MW AC; and Chamundeshwari Electricity Supply Co.—20 MW AC

(6) PPAs executed for approximately 70 MW AC of capacity; remaining electricity to be sold on an open contract basis

(7) Expandable to 160 MW AC, subject to satisfaction of certain PPA contract conditions

Results of Operations

The following table sets forth our consolidated statements of operations as a percentage of net sales for the years ended December 31, 2016, 2015, and 2014:

	Years Ended December 31,		
	2016	2015	2014
Net sales	100.0%	100.0%	100.0%
Cost of sales	76.1%	74.3%	75.7%
Gross profit	23.9%	25.7%	24.3%
Research and development	4.2%	3.6%	4.2%
Selling, general and administrative	8.9%	7.1%	7.5%
Production start-up	—%	0.5%	0.2%
Restructuring and asset impairments	27.7%	—%	—%
Operating (loss) income	(17.0)%	14.4%	12.4%
Foreign currency loss, net	(0.5)%	(0.2)%	—%
Interest income	0.9%	0.6%	0.5%
Interest expense, net	(0.7)%	(0.2)%	(0.1)%
Other income (expense), net	1.4%	(0.2)%	(0.1)%
Income tax (expense) benefit	(2.0)%	0.2%	(0.9)%
Equity in earnings of unconsolidated affiliates, net of tax	5.8%	0.6%	(0.1)%
Net (loss) income	(12.1)%	15.3%	11.7%

Segment Overview

We operate our business in two segments. Our components segment involves the design, manufacture, and sale of CdTe solar modules, which convert sunlight into electricity, and our systems segment includes the development, construction, operation, and maintenance of PV solar power systems, which primarily use our solar modules.

See Note 23 "Segment and Geographical Information" to our consolidated financial statements for the year ended December 31, 2016 included in this Annual Report on Form 10-K for more information on our operating segments. See also Item 7 "Management's Discussion and Analysis of Financial Condition and Results of Operations—Systems Project Pipeline" for a description of the system projects in our advanced-stage project pipeline.

Product Revenue

The following table sets forth the total amounts of solar module and solar power system net sales for the years ended December 31, 2016, 2015, and 2014. For the purpose of the following table, (i) solar module revenue is composed of revenue from the sale of solar modules to third parties, which does not include any modules sold as part of our PV solar power systems, and (ii) solar power system revenue is composed of revenue from the sale of PV solar power systems and related products and services, including any modules installed in such systems and any revenue generated by such systems (in thousands):

	2016	2015	2014
Solar module revenue	$ 675,453	$ 227,461	$ 228,319
Solar power system revenue	2,275,875	3,351,534	3,162,868
Net sales	$2,951,328	$3,578,995	$3,391,187

Solar module revenue to third parties increased by $448.0 million during 2016 compared to 2015 primarily as a result of a 211% increase in the volume of watts sold, partially offset by a 5% decrease in the average selling price per watt. Solar power system revenue decreased by $1,075.7 million during 2016 compared to 2015 primarily from the sale of majority interests in the North Star and Lost Hills projects in 2015, the completion of substantially all construction activities on the Imperial Solar Energy Center West and Decatur projects in 2015, the completion of substantially all construction activities on the Silver State South and McCoy projects in the first half of 2016, and lower revenue from module plus transactions. This decrease in revenue was partially offset by higher revenue from the commencement of construction on the Taylor and Butler projects in late 2015 and the commencement of construction on the East Pecos project in early 2016.

Solar module revenue to third parties decreased by $0.9 million during 2015 compared to 2014 primarily due to a 10% decrease in the average selling price per watt, partially offset by an 11% increase in the volume of watts sold. Solar power system revenue increased by $188.7 million during 2015 compared to 2014 primarily due to higher revenue from module plus transactions. Our net sales for 2015 also included the sale of majority interests in the partially constructed Desert Stateline project and North Star project and higher revenue from the Silver State South, McCoy, and Imperial Energy Center West projects, which commenced construction in late 2014. These 2015 net sales were offset by lower revenue from the completion, or substantial completion, of the Desert Sunlight, Solar Gen 2, Topaz, and Campo Verde projects in 2014.

Net sales

Components Business

We generally price and sell our solar modules per watt of nameplate power. During 2016, a significant portion of net sales for our components business included modules installed in our PV solar power systems described below under "Net Sales—Systems Business." Other than the modules included in our systems, we sold the majority of our solar modules to integrators and operators of systems in India, the United States, and the UAE.

From time to time, we enter into module sales agreements with customers worldwide for specific projects or volumes of modules. Such agreements are generally short-term in nature. During 2016, substantially all of our components business net sales, excluding modules installed in our systems, were denominated in U.S. dollars.

We transfer title and risk of loss to the customer and recognize revenue upon shipment or delivery, depending on the terms of the underlying sales contracts. Pricing is typically fixed or determinable at the time of shipment, and our customers generally do not have extended payment terms or rights of return under these contracts. The revenue recognition policies for our components business are described further in Note 2 "Summary of Significant Accounting Policies" to our consolidated financial statements for the year ended December 31, 2016 included in this Annual Report on Form 10-K.

During 2016, Southern Power Company and NextEra Energy, Inc. each accounted for more than 10% of our components business' net sales, which includes the solar modules used in our systems projects.

Systems Business

Through our fully integrated systems business, we provide complete turn-key PV solar power systems, or solar solutions, which may include project development, EPC services, and O&M services. Additionally, we may temporarily own and operate, or retain interests in, certain of our PV solar power systems, which are also included within our systems business. We typically use the percentage-of-completion method using actual costs incurred over total estimated costs to construct a project

(including module costs) as our standard accounting policy and apply this method after all revenue recognition criteria have been met. There are also instances in which we recognize revenue after a project has been completed, primarily due to a project not being sold prior to completion or because all revenue recognition criteria have not been met. The revenue recognition policies for our systems business are described in further detail in Note 2 "Summary of Significant Accounting Policies" to our consolidated financial statements for the year ended December 31, 2016 included in this Annual Report on Form 10-K.

During 2016, the majority of our systems business net sales were generated in North America, and the principal customers of our systems business were Southern Power Company; NextEra Energy, Inc.; and Recurrent Energy, LLC, each of which accounted for more than 10% of the segment's net sales.

The following table shows net sales by reportable segment for the years ended December 31, 2016, 2015, and 2014:

	Years Ended			Change			
(Dollars in thousands)	2016	2015	2014	2016 over 2015		2015 over 2014	
Components	$1,484,300	$1,389,579	$1,102,674	$ 94,721	7%	$286,905	26%
Systems	1,467,028	2,189,416	2,288,513	(722,388)	(33)%	(99,097)	(4)%
Net sales	$2,951,328	$3,578,995	$3,391,187	$(627,667)	(18)%	$187,808	6%

Net sales from our components segment, which includes solar modules used in our systems projects, increased by $94.7 million in 2016 primarily as a result of a 17% increase in the volume of watts sold, partially offset by a 9% decrease in the average selling price per watt. Net sales from our systems segment, which excludes solar modules used in our systems projects, decreased by $722.4 million in 2016 primarily from the sale of majority interests in the North Star and Lost Hills projects in 2015, the completion of substantially all construction activities on the Imperial Solar Energy Center West and Decatur projects in 2015, and the completion of substantially all construction activities on the Silver State South and McCoy projects in the first half of 2016. This decrease in revenue was partially offset by higher revenue from the commencement of construction on the Taylor and Butler projects in late 2015 and the commencement of construction on the East Pecos project in early 2016.

Net sales from our components segment, which includes solar modules used in our systems projects, increased by $286.9 million in 2015 primarily due to a 33% increase in the volume of watts sold, partially offset by a 5% decrease in the average selling price per watt. Net sales from our systems segment, which excludes solar modules used in our systems projects, decreased by $99.1 million in 2015 primarily as a result of lower revenue from the completion, or substantial completion, of the Desert Sunlight, Solar Gen 2, Topaz, and Campo Verde projects in 2014. These decreases were partially offset by the sale of majority interests in the partially constructed Desert Stateline project and North Star project, and higher revenue from the Silver State South, McCoy, and Imperial Solar Energy Center West projects, which commenced construction in late 2014.

Cost of sales

Components Business

Our cost of sales includes the cost of raw materials and components for manufacturing solar modules, such as glass, transparent conductive coatings, CdTe and other thin-film semiconductors, laminate materials, connector assemblies, edge seal materials, and other materials and components. In addition, our cost of sales includes direct labor for the manufacturing of solar modules and manufacturing overhead such as engineering, equipment maintenance, environmental health and safety, quality and production control, information technology, and procurement costs. Our cost of sales also includes depreciation of manufacturing plant and equipment, facility-related expenses, and costs

associated with shipping, warranties, and our solar module collection and recycling obligation (excluding accretion).

As further described in Note 23 "Segment and Geographical Information" to our consolidated financial statements for the year ended December 31, 2016 included in this Annual Report on Form 10-K, we include the sale of solar modules manufactured by our components business and used by our systems business within net sales of our components business. Therefore, the related cost of sales is also included within our components business.

Systems Business

For our systems business, project-related costs include development costs (legal, consulting, transmission upgrade, interconnection, permitting, and other similar costs), standard EPC costs (consisting primarily of BoS costs for inverters, electrical and mounting hardware, project management and engineering costs, and construction labor costs), and site specific costs.

The following table shows cost of sales by reportable segment for the years ended December 31, 2016, 2015, and 2014:

	Years Ended			Change			
(Dollars in thousands)	2016	2015	2014	2016 over 2015		2015 over 2014	
Components	$1,105,414	$1,041,726	$1,009,164	$ 63,688	6%	$32,562	3%
Systems	1,141,935	1,618,002	1,557,082	(476,067)	(29)%	60,920	4%
Cost of sales	$2,247,349	$2,659,728	$2,566,246	$(412,379)	(16)%	$93,482	4%
% of net sales	76.1%	74.3%	75.7%				

Our cost of sales decreased $412.4 million, or 16%, and increased 1.8 percentage points as a percentage of net sales when comparing 2016 with 2015. The decrease in cost of sales was primarily the result of a $476.1 million decrease in our systems segment cost of sales primarily due to the volume of projects under construction and the timing of when all revenue recognition criteria were met. This net decrease was partially offset by a $63.7 million increase in our components segment cost of sales primarily due to the following:

- Higher costs of $190.8 million associated with the increased volume of modules sold directly to third parties and as part of our systems business projects;
- A reduction in our module collection and recycling obligation of $69.6 million during 2015 resulting from certain recycling technology advancements, which significantly increased the throughput of modules able to be recycled at a point in time, along with other material and labor cost reductions; and
- Higher inventory write-downs of $22.3 million primarily related to our remaining crystalline silicon module inventories; partially offset by
- Continued reductions in the cost per watt of our solar modules, which decreased our components segment cost of sales by $246.5 million.

Our cost of sales increased $93.5 million, or 4%, and decreased 1.4 percentage points as a percentage of net sales when comparing 2015 with 2014. The increase in cost of sales was driven by a $60.9 million increase in our systems segment cost of sales primarily due to a mix of lower gross profit system projects sold or under construction during the period. Our components segment cost of sales increased by $32.6 million primarily as a result of the following:

- Higher costs of $309.4 million associated with the increased volume of modules sold as part of our systems business projects; partially offset by

- Continued manufacturing cost reductions of $135.1 million;
- A reduction in our module collection and recycling obligation of $69.6 million, as described above; and
- Lower underutilization penalties of $55.0 million due to the improved capacity utilization of our manufacturing facilities. During 2015, we ran our factories at approximately 92% capacity utilization, which represented an 11.0 percentage point increase from 2014.

Gross profit

Gross profit is affected by numerous factors, including the selling prices of our modules and systems, our manufacturing costs, BoS costs, project development costs, the capacity utilization of our manufacturing facilities, and foreign exchange rates. Gross profit is also affected by the mix of net sales generated by our components and systems businesses.

The following table shows gross profit for the years ended December 31, 2016, 2015, and 2014:

	Years Ended			Change			
(Dollars in thousands)	**2016**	**2015**	**2014**	**2016 over 2015**		**2015 over 2014**	
Gross profit	$703,979	$919,267	$824,941	$(215,288)	(23)%	$94,326	11%
% of net sales	23.9%	25.7%	24.3%				

Gross profit as a percentage of net sales decreased by 1.8 percentage points during 2016 compared with 2015 primarily due to the mix of lower gross profit projects sold and under construction, higher inventory write-downs, and the reduction in our module collection and recycling obligation in 2015 as described above, partially offset by the higher gross margins on modules sold to third parties. Gross profit as a percentage of net sales increased by 1.4 percentage points during 2015 compared with 2014 primarily due to a reduction in our module collection and recycling obligation and improved utilization of our manufacturing facilities.

Research and development

Research and development expense consists primarily of salaries and personnel-related costs, the cost of products, materials, and outside services used in our process and product R&D activities, and depreciation and amortization expense associated with R&D specific facilities and equipment. We maintain a number of programs and activities to improve our technology and processes in order to enhance the performance and reduce the costs of our solar modules and PV solar power systems using our modules.

The following table shows research and development expense for the years ended December 31, 2016, 2015, and 2014:

	Years Ended			Change			
(Dollars in thousands)	**2016**	**2015**	**2014**	**2016 over 2015**		**2015 over 2014**	
Research and development	$124,762	$130,593	$143,969	$(5,831)	(4)%	$(13,376)	(9)%
% of net sales	4.2%	3.6%	4.2%				

The decrease in our research and development expense during 2016 compared to 2015 was primarily due to reductions in our R&D headcount and employee compensation expense resulting from the restructuring activities further discussed in Note 4 "Restructuring and Asset Impairments" to our consolidated financial statements for the year ended December 31, 2016 included in this Annual Report on Form 10-K. During 2016, the average conversion efficiency of our CdTe solar modules produced was 16.4% compared to 15.6% in 2015.

The decrease in our research and development expense during 2015 compared to 2014 was primarily due to reduced material and module testing costs associated with the development of next-generation CdTe solar modules and lower costs for outside services, partially offset by higher employee compensation expense. During 2015, the average conversion efficiency of our CdTe solar modules was 15.6% compared to 14.0% in 2014.

Selling, general and administrative

Selling, general and administrative expense consists primarily of salaries and other personnel-related costs, professional fees, insurance costs, travel expenses, and other business development and selling expenses.

The following table shows selling, general and administrative expense for the years ended December 31, 2016, 2015, and 2014:

	Years Ended			Change			
(Dollars in thousands)	**2016**	**2015**	**2014**	**2016 over 2015**		**2015 over 2014**	
Selling, general and administrative	$261,994	$255,192	$253,827	$6,802	3%	$1,365	1%
% of net sales	8.9%	7.1%	7.5%				

Our selling, general and administrative expense increased by $6.8 million, or 3%, and was 8.9% and 7.1% as a percentage of net sales, when comparing 2016 with 2015, respectively. The increase was primarily attributable to higher development costs for early-stage projects and impairments of certain project assets, partially offset by lower employee compensation expense due to the various restructuring activities described in Note 4 "Restructuring and Asset Impairments" to our consolidated financial statements for the year ended December 31, 2016 included in this Annual Report on Form 10-K, and lower professional fees associated with the formation and IPO of the Partnership.

Our selling, general and administrative expense increased by $1.4 million, or 1%, and was 7.1% and 7.5% as a percentage of net sales, when comparing 2015 with 2014, respectively. The increase was primarily due to higher employee compensation expense and higher professional fees associated with the formation and IPO of the Partnership, partially offset by lower project development expense and lower accretion expense associated with the reduction in our module collection and recycling obligation.

Production start-up

Production start-up expense consists primarily of employee compensation and other costs associated with operating a production line before it has been qualified for full production, including the cost of raw materials for solar modules run through the production line during the qualification phase and applicable facility related costs. Costs related to equipment upgrades and implementation of manufacturing process improvements are also included in production start-up expense as well as costs related to the selection of a new site, including related legal and regulatory costs, to the extent we cannot capitalize these expenditures. In general, we expect production start-up expense per production line to be higher when we build an entirely new manufacturing facility compared with the addition of new production lines at an existing manufacturing facility, primarily due to the additional infrastructure investment required when building an entirely new facility.

The following table shows production start-up expense for the years ended December 31, 2016, 2015, and 2014:

(Dollars in thousands)	Years Ended			Change			
	2016	2015	2014	2016 over 2015		2015 over 2014	
Production start-up	$1,021	$16,818	$5,146	$(15,797)	(94)%	$11,672	227%
% of net sales	—%	0.5%	0.2%				

During 2016, we incurred certain production start-up expense related to our next generation CdTe module offerings. Production start-up expense for 2015 was primarily related to our previous crystalline silicon manufacturing operations at our facility in Kulim, Malaysia, which commenced during the third quarter of 2014.

Restructuring and asset impairments

Restructuring and asset impairments includes those expenses incurred related to material restructuring initiatives and includes any associated asset impairments, costs for employee termination benefits, costs for contract terminations and penalties, and other restructuring related costs. Such restructuring initiatives are intended to align the organization with current business conditions and to reduce costs.

The following table shows restructuring and asset impairments for the years ended December 31, 2016, 2015, and 2014:

(Dollars in thousands)	Years Ended			Change			
	2016	2015	2014	2015 over 2014		2014 over 2013	
Restructuring and asset impairments	$818,792	$—	$—	$818,792	100%	$—	—%
% of net sales	27.7%	—%	—%				

During 2016, our restructuring and asset impairments included $662.5 million of charges primarily related to our November 2016 decision to accelerate our transition to Series 6 module manufacturing and restructure our operations, $87.5 million of charges associated with the end of our crystalline silicon module manufacturing operations, and $68.8 million of goodwill impairment charges. See Note 4 ‘‘Restructuring and Asset Impairments’’ to our consolidated financial statements for the year ended December 31, 2016 included in this Annual Report on Form 10-K for additional information. We expect to incur up to $80 million of additional charges related to these actions as we complete the transition to Series 6 modules manufacturing in 2017 and 2018. As a result of these actions, we also expect to reduce our annual cost of sales and operating expenses by approximately $80 million and $60 million, respectively.

Foreign currency loss, net

Foreign currency loss, net consists of the net effect of gains and losses resulting from holding assets and liabilities and conducting transactions denominated in currencies other than our subsidiaries' functional currencies.

The following table shows foreign currency loss, net for the years ended December 31, 2016, 2015, and 2014:

(Dollars in thousands)	Years Ended			Change			
	2016	2015	2014	2016 over 2015		2015 over 2014	
Foreign currency loss, net	$(14,007)	$(6,868)	$(1,461)	$(7,139)	104%	$(5,407)	370%

Foreign currency loss, net increased during 2016 compared with 2015 primarily as a result of hedging activities related to our subsidiaries in India as well as differences between our economic hedge positions and the underlying exposures along with changes in foreign currency rates. Foreign currency loss, net increased during 2015 compared with 2014 primarily due to differences between our economic hedge positions and the underlying exposure along with changes in foreign currency rates.

Interest income

Interest income is earned on our cash, cash equivalents, marketable securities, and restricted cash and investments. Interest income also includes interest earned from notes receivable and late customer payments.

The following table shows interest income for the years ended December 31, 2016, 2015, and 2014:

	Years Ended			Change			
(Dollars in thousands)	**2016**	**2015**	**2014**	**2016 over 2015**		**2015 over 2014**	
Interest income	$25,193	$22,516	$18,030	$2,677	12%	$4,486	25%

Interest income during 2016 increased compared to 2015 primarily as a result of improved yields on our fixed income marketable securities. Interest income during 2015 increased compared to 2014 primarily as a result of higher average balances of notes receivable due from affiliates.

Interest expense, net

Interest expense is incurred on various debt financings. We capitalize interest expense into our project assets or property, plant and equipment when such costs qualify for interest capitalization, which reduces the amount of net interest expense reported in any given period.

The following table shows interest expense, net for the years ended December 31, 2016, 2015, and 2014:

	Years Ended			Change			
(Dollars in thousands)	**2016**	**2015**	**2014**	**2016 over 2015**		**2015 over 2014**	
Interest expense, net	$(20,538)	$(6,975)	$(1,982)	$(13,563)	194%	$(4,993)	252%

Interest expense, net of amounts capitalized, increased in 2016 compared to 2015 primarily due to lower interest costs capitalized to certain projects that were substantially completed in 2016 and higher levels of project specific debt financings outstanding during 2016. Interest expense, net of amounts capitalized, increased in 2015 compared to 2014 primarily as a result of higher levels of project specific debt financings.

Other income (expense), net

Other income (expense), net is primarily comprised of miscellaneous items, and realized gains and losses on the sale of marketable securities and cost method investments.

The following table shows other expense, net for the years ended December 31, 2016, 2015, and 2014:

	Years Ended			Change			
(Dollars in thousands)	**2016**	**2015**	**2014**	**2016 over 2015**		**2015 over 2014**	
Other income (expense), net	$40,252	$(5,502)	$(4,485)	$45,754	(832)%	$(1,017)	23%

Other income (expense), net increased in 2016 compared to 2015 primarily due to realized gains of $41.3 million on the sale of certain restricted investments driven by an effort to align the currencies of

the investments with those of the corresponding collection and recycling liabilities, the resolution of an outstanding matter with a former customer, and the reversal of the outstanding contingent consideration associated with our TetraSun acquisition as the result of our executive management's decision to end production of our crystalline silicon modules, which adversely affected the likelihood of achieving certain module shipment volume milestones, partially offset by the impairment of a cost method investment. See Note 4 "Restructuring and Asset Impairments" to our consolidated financial statements for further discussion relating to these restructuring activities. Other income (expense), net in 2015 was consistent with other income (expense), net in 2014.

Income tax (expense) benefit

Income tax expense or benefit, deferred tax assets and liabilities, and liabilities for unrecognized tax benefits reflect our best estimate of current and future taxes to be paid. We are subject to income taxes in both the United States and numerous foreign jurisdictions in which we operate; principally Australia, India, and Malaysia. Significant judgments and estimates are required in determining our consolidated income tax expense. The statutory federal corporate income tax rate in the United States is 35.0%, while the tax rates in Australia, India, and Malaysia are 30.0%, 34.6%, and 24.0%, respectively. In Malaysia, we have been granted a long-term tax holiday, scheduled to expire in 2027, pursuant to which substantially all of our income earned in Malaysia is exempt from income tax.

The following table shows income tax (expense) benefit for the years ended December 31, 2016, 2015, and 2014:

	Years Ended			Change			
(Dollars in thousands)	**2016**	**2015**	**2014**	**2016 over 2015**		**2015 over 2014**	
Income tax (expense) benefit	$(58,219)	$6,156	$(31,188)	$(64,375)	(1,046)%	$37,344	(120)%
Effective tax rate	(12.3)%	(1.2)%	7.2%				

Our tax rate is affected by recurring items, such as tax rates in foreign jurisdictions and the relative amounts of income we earn in those jurisdictions. The rate is also affected by discrete items that may occur in any given year, but are not consistent from year to year. Income tax expense increased by $64.4 million during 2016 compared to 2015 primarily due to certain U.S. taxes on a cash distribution received from our foreign subsidiary, partially offset by tax benefits from restructuring charges and a $35.4 million reversal of an uncertain tax position related to the income of a foreign subsidiary. Income tax expense decreased by $37.3 million during 2015 compared with 2014. The decrease in income tax expense was primarily the result of a $41.7 million discrete tax benefit associated with the receipt of a private letter ruling during 2015. See Note 20 "Income Taxes" to our consolidated financial statements included in this Annual Report on Form 10-K for additional information.

Equity in earnings of unconsolidated affiliates, net of tax

Equity in earnings of unconsolidated affiliates, net of tax represents our proportionate share of the earnings or losses of unconsolidated affiliates with whom we have made equity method investments as well as any gains or losses on the sale or disposal of such investments.

The following table shows equity in earnings of unconsolidated affiliates, net of tax for the years ended December 31, 2016, 2015, and 2014:

	Years Ended			Change			
(Dollars in thousands)	**2016**	**2015**	**2014**	**2016 over 2015**		**2015 over 2014**	
Equity in earnings, net of tax	$171,945	$20,430	$(4,949)	$151,515	742%	$25,379	(513)%

Equity in earnings of unconsolidated affiliates, net of tax increased during 2016 compared to 2015 primarily due to the recognition of a gain of $125.1 million, net of tax, on the sale of our residual

interest in the Desert Stateline project to 8point3 Operating Company, LLC ("OpCo"), a subsidiary of the Partnership; higher equity in earnings from our investments in OpCo; and higher equity in earnings from our investment in the Desert Stateline project prior to its sale. Equity in earnings of unconsolidated affiliates, net of tax increased during 2015 compared to 2014 primarily as a result of our investment in OpCo, along with the impairment of certain equity method investments during 2014.

Liquidity and Capital Resources

As of December 31, 2016, we believe that our cash, cash equivalents, marketable securities, cash flows from operating activities including the contracted portion of our advanced-stage project pipeline, availability under our Revolving Credit Facility considering minimum liquidity covenant requirements, and access to the capital markets will be sufficient to meet our working capital, systems project investment, and capital expenditure needs for at least the next 12 months. We monitor our working capital to ensure we have adequate liquidity, both domestically and internationally.

We intend to maintain appropriate debt levels based upon cash flow expectations, our overall cost of capital, and expected cash requirements for operations, capital expenditures, and strategic discretionary spending. In the future, we may also engage in additional debt or equity financings, including project specific debt financings. We believe that when necessary, we will have adequate access to the capital markets, although our ability to raise capital on terms commercially acceptable to us could be constrained if there is insufficient lender or investor interest due to industry-wide or company-specific concerns. Such financings could result in increased debt service expenses or dilution to our existing stockholders.

As of December 31, 2016, we had $2.0 billion in cash, cash equivalents, and marketable securities compared to $1.8 billion as of December 31, 2015. Cash, cash equivalents, and marketable securities as of December 31, 2016 increased primarily as the result of proceeds from the sale of certain equity method investments and cash generated from operating activities, partially offset by expenditures for property, plant, and equipment. As of December 31, 2016, $1.2 billion of our cash, cash equivalents, and marketable securities were held by foreign subsidiaries and were primarily based in U.S. dollar, Euro, and Malaysian ringgit denominated holdings. As of December 31, 2015, $1.5 billion of our cash, cash equivalents, and marketable securities were held by foreign subsidiaries and were primarily based in U.S. dollar and Euro denominated holdings.

We utilize a variety of tax planning and financing strategies in an effort to ensure that our worldwide cash is available in the locations in which it is needed. If these funds were needed for our operations in the U.S., we could be required to accrue and pay U.S. taxes to repatriate such funds. In November 2016, we distributed $750.0 million of cash to the U.S. to fund capital investments associated with our transition to Series 6 module manufacturing. Other than this distribution, we intend to permanently reinvest our unremitted earnings outside of the U.S., with the exception of Canada and Germany, and our future plans do not demonstrate a need to repatriate additional amounts to fund our domestic operations. Furthermore, changes to foreign government banking regulations may restrict our ability to move funds among various jurisdictions under certain circumstances, which could negatively impact our access to capital, resulting in an adverse effect on our liquidity and capital resources.

Our systems business requires significant liquidity and is expected to continue to have significant liquidity requirements in the future. The net amount of our project assets, deferred project costs, billings in excess of costs and estimated earnings, and payments and billings for deferred project costs, which approximates our net capital investment in the development and construction of systems projects was $1.1 billion as of December 31, 2016. Solar power project development and construction cycles, which span the time between the identification of a site location and the commercial operation of a system, vary substantially and can take many years to mature. As a result of these long project cycles

and strategic decisions to finance the construction of certain projects, we may need to make significant up-front investments of resources in advance of the receipt of any cash from the sale of such projects. These up-front investments may include using our working capital, project financing arrangements, or availability under our Revolving Credit Facility to finance the construction of such projects. For example, we may have to complete, or substantially complete, the construction of a systems project before such project is sold. Delays in construction progress or in completing the sale of our systems projects that we are self-financing may also impact our liquidity. We have historically financed these up-front systems project investments primarily using working capital. In certain circumstances, we may need to finance construction costs exclusively using working capital, if project financing becomes unavailable due to market-wide, regional, or other concerns.

We are partnering with local developers on project development in markets around the world where we may take an equity stake in a project for a number of years. We are also self-developing projects in such markets where we may hold all or a significant portion of the equity in the projects for several years. Given the duration of these investments and the currency risk relative to the U.S. dollar in some of these new markets, we continue to explore local financing alternatives. Should these financing alternatives be unavailable or too cost prohibitive, we could be exposed to significant currency risk and our liquidity could be adversely impacted.

Additionally, we may elect to retain an ownership interest in certain systems projects after they become operational if we determine it would be of economic and strategic benefit to do so. If, for example, we cannot sell a systems project at economics that are attractive to us or potential customers are unwilling to assume the risks and rewards typical of PV solar power system ownership, we may instead elect to temporarily own and operate such systems until we can sell the systems on economically attractive terms. As with traditional electricity generation assets, the selling price of a PV solar power system could be higher at or post-completion to reflect the elimination of construction and performance risks and other uncertainties. The decision to retain ownership of a system impacts liquidity depending upon the size and cost of the project. As of December 31, 2016, we had $448.6 million of PV solar power systems that have been placed in service, primarily in international markets. We may elect to enter into temporary or long-term project financing to reduce the impact on our liquidity and working capital with regards to such projects and systems. We may also consider entering into tax equity or other arrangements with respect to ownership interests in certain of our projects, including selling interests in our projects to the Partnership described under ‘‘Management’s Discussion and Analysis of Financial Condition and Results of Operations—Certain Trends and Uncertainties—8point3 Energy Partners LP,’’ which could cause a portion of the economics of such projects to be recognized over time.

The following additional considerations have impacted or may impact our liquidity in 2017 and beyond:

- The amount of accounts receivable, unbilled and retainage as of December 31, 2016 was $205.5 million, which included $199.3 million of unbilled amounts. These unbilled accounts receivable represent revenue that has been recognized in advance of billing the customer under the terms of the underlying construction contracts. Such construction costs have been funded with working capital, and the unbilled amounts are expected to be billed and collected from customers during the next 12 months. Once we meet the billing criteria under a construction contract, we bill our customers accordingly and reclassify the accounts receivable, unbilled and retainage to accounts receivable trade, net. The amount of accounts receivable, unbilled and retainage as of December 31, 2016 also included $6.3 million of retainage, which represents the portion of a systems project contract price earned by us for work performed, but held for payment by our customer as a form of security until we reach certain construction milestones. Such retainage amounts relate to construction costs incurred and construction work already performed.

- The amount of solar module inventory and BoS parts as of December 31, 2016 was $365.1 million. As we continue with the construction of our advanced-stage project pipeline, we must produce solar modules and procure BoS parts in the required volumes to support our planned construction schedules. As part of this construction cycle, we typically must manufacture modules or acquire the necessary BoS parts for construction activities in advance of receiving payment for such materials, which may temporarily reduce our liquidity. Once solar modules and BoS parts are installed in a project, such installed amounts are classified as either project assets, deferred project costs, PV solar power systems, or cost of sales depending upon whether the project is subject to a definitive sales contract and whether all revenue recognition criteria have been met. As of December 31, 2016, $104.9 million, or 35%, of our solar module inventory was either on-site or in-transit to our systems projects. All BoS parts are for our systems business projects.
- We may commit working capital during 2017 and beyond to acquire solar power projects in various stages of development, including advanced-stage projects with PPAs, and to continue developing those projects as necessary. Depending upon the size and stage of development, costs to acquire such solar power projects could be significant. When evaluating project acquisition opportunities, we consider both the strategic and financial benefits of any such acquisitions.
- Joint ventures or other strategic arrangements with partners are a key part of our strategy. We have initiatives in several markets to expedite our penetration of those markets and establish relationships with potential customers. Some of these arrangements involve and are expected to involve significant investments or other allocations of capital that could reduce our liquidity or require us to pursue additional sources of financing, assuming such sources are available to us. Additionally, we have elected and may in the future elect or be required to temporarily retain a noncontrolling ownership interest in certain underlying systems projects we develop, supply modules to, or construct. Any such retained ownership interest is expected to impact our liquidity to the extent we do not obtain new sources of capital to fund such investments.
- We expect to make significant capital investments over the next two years as we transition our production to Series 6 module technology and purchase the related manufacturing equipment. We expect the aggregate capital investment for this program to be approximately $1 billion. During 2017, we expect to spend $525 million to $625 million for capital expenditures, the majority of which is associated with the Series 6 transition. We believe these capital expenditures will further increase our solar module conversion efficiencies, reduce manufacturing costs, and reduce the overall cost of systems employing our modules.

Cash Flows

The following table summarizes the key cash flow metrics for the years ended December 31, 2016, 2015, and 2014 (in thousands):

	Years Ended		
	2016	**2015**	**2014**
Net cash provided by (used in) operating activities	$ 206,753	$(325,209)	$ 735,516
Net cash provided by (used in) investing activities	144,520	(156,177)	(387,818)
Net cash (used in) provided by financing activities	(136,393)	101,207	(46,907)
Effect of exchange rate changes on cash, cash equivalents and restricted cash	(6,306)	(19,272)	(19,487)
Net increase (decrease) in cash, cash equivalents and restricted cash	$ 208,574	$(399,451)	$ 281,304

Operating Activities

The increase in cash provided by operating activities during 2016 was primarily driven by the lower volume of solar power projects under development and construction, which generally require significant liquidity when such projects are financed using working capital. Specifically, the reduction in the volume of our system business affected our trade accounts receivable, project assets, deferred project costs, and certain current liabilities. The increase in cash provided by operating activities was also driven by the sale of certain other solar power projects at or near substantial completion. The decrease in cash provided by operating activities during 2015 was primarily driven by the increase in project assets and deferred project costs resulting from our financing the construction of certain projects with our working capital and increases in our trade accounts receivable.

Investing Activities

The increase in cash provided by investing activities during 2016 was primarily due to proceeds from sales of equity and cost method investments of $291.5 million, including the sale of our remaining interest in the Desert Stateline project, and higher net proceeds from sales and maturities of marketable securities and restricted investments of $102.9 million during 2016 compared to $203.1 million of net purchases of marketable securities and restricted investments in 2015. The effects of these items were partially offset by lower distributions received from equity method investments in 2016. The decrease in cash used in investing activities during 2015 was driven by the receipt of $239.0 million from the IPO of the Partnership, and lower purchases of property, plant and equipment. The effects of these items were partially offset by net purchases of marketable securities of $203.1 million during 2015 compared to $77.5 million during 2014.

Financing Activities

Cash used in financing activities during 2016 was mainly driven by payments of long-term debt of $137.4 million. Cash provided by financing activities during 2015 primarily resulted from $146.0 million of proceeds from borrowings under our project construction credit facilities in Chile, India, and Japan and $44.7 million of proceeds from the leaseback financing associated with the Maryland Solar project, partially offset by $47.1 million of payments of long-term debt.

Contractual Obligations

The following table presents our contractual obligations as of December 31, 2016 (in thousands), which consists of legal commitments requiring us to make fixed or determinable cash payments. We purchase raw materials for inventory, manufacturing equipment, construction materials, and various services from a variety of vendors. During the normal course of business, in order to manage manufacturing and construction lead times and help assure an adequate supply of certain items, we

enter into agreements with suppliers that either allow us to procure goods and services when we choose or that establish purchase requirements over the term of the agreement.

		Payments Due by Year			
	Total	Less Than 1 Year	1 - 3 Years	3 - 5 Years	More Than 5 Years
Long-term debt obligations	$ 196,691	$ 27,958	$ 10,574	$23,070	$135,089
Interest payments(1)	102,173	22,469	21,718	19,600	38,386
Capital lease obligations	582	420	162	—	—
Operating lease obligations	192,536	16,847	26,605	14,249	134,835
Sale-leaseback payments(2)	14,334	5,219	9,115	—	—
Purchase obligations(3)	524,962	464,271	33,611	8,725	18,355
Recycling obligations	166,277	—	—	—	166,277
Contingent consideration(4)	30,092	19,620	10,472	—	—
Other obligations(5)	38,952	7,763	9,675	8,632	12,882
Total	$1,266,599	$564,567	$121,932	$74,276	$505,824

(1) Includes estimated cash interest to be paid over the remaining terms of the underlying debt. Interest payments are based on fixed and floating rates in effect at December 31, 2016.

(2) Sale-leaseback payments represent the fixed rent payments associated with our leaseback of the Maryland Solar project from a subsidiary of the Partnership. See Note 12 "Investments in Unconsolidated Affiliates and Joint Ventures" to our consolidated financial statements for the year ended December 31, 2016 included in this Annual Report on Form 10-K for further information.

(3) Purchase obligations are agreements to purchase goods or services that are noncancelable, enforceable, and legally binding and that specify all significant terms, including fixed or minimum quantities to be purchased; fixed, minimum, or variable price provisions; and the approximate timing of the transactions.

(4) In connection with business or project acquisitions, we may agree to pay additional amounts to the sellers upon achievement of certain milestones. See Note 16 "Commitments and Contingencies" to our consolidated financial statements for the year ended December 31, 2016 included in this Annual Report on Form 10-K for further information.

(5) Includes expected letter of credit fees and unused revolver fees.

In addition to the amounts shown in the table above, we have recorded $89.3 million of unrecognized tax benefits as liabilities in accordance with Accounting Standards Codification ("ASC") 740, *Income Taxes*, and we are uncertain as to if or when such amounts may be settled.

Off-Balance Sheet Arrangements

We have no off-balance sheet debt or similar obligations, other than financial assurance related instruments and operating leases, which are not classified as debt. We do not guarantee any third-party debt. See Note 16 "Commitments and Contingencies" to our consolidated financial statements for the year ended December 31, 2016 included in this Annual Report on Form 10-K for further information about our financial assurance related instruments.

Recent Accounting Pronouncements

See Note 3 "Recent Accounting Pronouncements" to our consolidated financial statements for the year ended December 31, 2016 included in this Annual Report on Form 10-K for a summary of recent accounting pronouncements.

Critical Accounting Estimates

In preparing our consolidated financial statements in conformity with accounting principles generally accepted in the United States, we make estimates and assumptions that affect the amounts of reported assets, liabilities, revenues, and expenses, as well as the disclosure of contingent liabilities. Some of our accounting policies require the application of significant judgment in the selection of the appropriate assumptions for making these estimates. By their nature, these judgments are subject to an inherent degree of uncertainty. We base our judgments and estimates on our historical experience, our forecasts, and other available information, as appropriate. The actual results experienced by us may differ materially and adversely from our estimates. To the extent there are material differences between our estimates and the actual results, our future results of operations will be affected. Our significant accounting policies are described in Note 2 "Summary of Significant Accounting Policies" to our consolidated financial statements for the year ended December 31, 2016 included in this Annual Report on Form 10-K. Our critical accounting estimates, which require the most significant management estimates and judgment in determining the amounts reported in our consolidated financial statements included in this Annual Report on Form 10-K, are as follows:

Revenue Recognition—Systems Business. We recognize revenue for arrangements entered into by our systems business generally using two revenue recognition models, following the guidance in either ASC 605-35, *Construction-Type and Production-Type Contracts*, or ASC 360-20, *Real Estate Sales,* for arrangements which include land or land rights.

Systems business sales arrangements in which we construct a PV solar power system for a specific customer on land that is controlled by the customer, and has not been previously controlled by First Solar, are accounted for under ASC 605-35. For such sales arrangements, we use the percentage-of-completion method, as described further below, using actual costs incurred over total estimated costs to develop and construct the system (including module costs) as our standard accounting policy.

Systems business sales arrangements in which we convey control of land or land rights as part of the transaction are accounted for under ASC 360-20. Accordingly, we use one of the following revenue recognition methods, based upon an evaluation of the substance and form of the terms and conditions of such real estate sales:

(i) We apply the percentage-of-completion method, as further described below, to certain real estate sales arrangements in which we convey control of land or land rights when a sale has been consummated, we have transferred the usual risks and rewards of ownership to the buyer, the initial and continuing investment criteria have been met, we have the ability to estimate our costs and progress toward completion, and all other revenue recognition criteria have been met. When evaluating whether the usual risks and rewards of ownership have transferred to the buyer, we consider whether we have or may be contingently required to have any prohibited forms of continuing involvement with the project pursuant to ASC 360-20. The initial and continuing investment requirements, which demonstrate a buyer's commitment to honor its obligations for the sales arrangement, can typically be met through the receipt of cash or an irrevocable letter of credit from a highly creditworthy lending institution.

(ii) Depending on whether the initial and continuing investment requirements have been met and whether collectability from the buyer is reasonably assured, we may align our revenue recognition and release of project assets or deferred project costs to cost of sales with the receipt of payment from the buyer if the sale has been consummated and we have transferred the usual risks and rewards of ownership to the buyer.

For any systems business sales arrangements containing multiple deliverables not required to be accounted for under ASC 605-35 (long-term construction contracts) or ASC 360-20 (real estate sales), we analyze each activity within the sales arrangement to adhere to the separation guidelines of

ASC 605-25 for multiple-element arrangements. We allocate revenue for any transactions involving multiple elements to each unit of accounting based on its relative selling price and recognize revenue for each unit of accounting when all revenue recognition criteria for a unit of accounting have been met.

Our system business sales arrangements within the scope of ASC 360-20 involve a range of standard product warranties, which include limited solar module warranties, limited BoS warranties, and system capacity and energy performance testing. Each standard product warranty program represents a risk of the module manufacturer or system EPC contractor, and is not an obligation or risk of a system owner. These programs do not represent any guarantee of energy output and relate to the underlying performance of the system assets. Consequently, our product warranty programs do not represent any guarantees of cash flows related to the systems, and we have not assumed any of the risks and rewards of ownership with respect to such programs. Separately, our system customers may also engage us to provide O&M services, which would typically include an effective availability guarantee. Our availability guarantees are an incremental offering within separate arrangements for O&M services. Availability guarantees are guarantees of our own service performance and do not represent guarantees of a system's output or cash flows. Accordingly, our product warranties and market based service contracts are not forms of continuing involvement that would indicate that substantially all of the risks and rewards of ownership have not been transferred to the system owner.

Revenue Recognition—Percentage-of-Completion. In applying the percentage-of-completion method, we use the actual costs incurred relative to the total estimated costs (including module costs) in order to determine the progress towards completion and calculate the corresponding amount of revenue and profit to recognize. Costs incurred include solar modules, direct materials, labor, subcontractor costs, and those indirect costs related to contract performance, such as indirect labor and supplies. We recognize solar module and direct material costs as incurred when such items have been installed in a system. When contracts specify that title to solar modules and direct materials transfers to the customer before installation has been performed, we will not recognize revenue or the associated costs until those materials are installed and have met all other revenue recognition requirements. We consider solar modules and direct materials to be installed when they are permanently placed or affixed to a PV solar power system as required by engineering designs. Solar modules manufactured and owned by us that will be used in our systems remain within inventory until such modules are installed in a system.

The percentage-of-completion method of revenue recognition requires us to make estimates of net contract revenues and costs to complete our projects. In making such estimates, management judgments are required to evaluate significant assumptions including the amount of net contract revenues, the cost of materials and labor, expected labor productivity, the impact of potential variances in schedule completion, and the impact of any penalties, claims, change orders, or performance incentives.

If estimated total costs on any contract are greater than the net contract revenues, we recognize the entire estimated loss in the period the loss becomes known. The cumulative effect of the revisions to estimates related to net contract revenues and costs to complete contracts, including penalties, claims, change orders, performance incentives, anticipated losses, and others are recorded in the period in which the revisions to estimates are identified and the amounts can be reasonably estimated. The effect of the changes on future periods are recognized as if the revised estimates had been used since revenue was initially recognized under the contract. Such revisions could occur in any reporting period, and the effects may be material depending on the size of the contracts or the changes in estimates.

Accrued Solar Module Collection and Recycling Liability. We recognize expense at the time of sale for the estimated cost of our future obligations for collecting and recycling solar modules covered by our solar module collection and recycling program. We estimate the cost of our collection and recycling obligations based on the present value of the expected probability-weighted future cost of collecting

and recycling the solar modules, which includes estimates for the cost of packaging materials, the cost of freight from the solar module installation sites to a recycling center, the material, labor, capital costs, and scale of recycling centers, and an estimated third-party profit margin and return on risk for collection and recycling services. We base these estimates on (i) our experience collecting and recycling our solar modules, (ii) the expected timing of when our solar modules will be returned for recycling, and (iii) expected economic conditions at the time the solar modules will be collected and recycled. In the periods between the time of sale and the related settlement of the collection and recycling obligation, we accrete the carrying amount of the associated liability by applying the discount rate used for its initial measurement. We periodically review our estimates of expected future recycling costs and may adjust our liability accordingly.

At December 31, 2016, our estimated liability for collecting and recycling solar modules covered by our collection and recycling program was $166.3 million. A 1% increase in the annualized inflation rate used in our estimated future collection and recycling cost per module would increase our liability by $37.5 million, and a 1% decrease in that rate would decrease our liability by $31.0 million.

Product Warranties. We provide a limited PV solar module warranty covering defects in materials and workmanship under normal use and service conditions for generally 10 years. We also typically warrant that modules installed in accordance with agreed-upon specifications will produce at least 97% of their labeled power output rating during the first year, with the warranty coverage reducing by 0.7% every year thereafter throughout the 25-year performance warranty period. In resolving claims under both the limited defect and power output warranties, we typically have the option of either repairing or replacing the covered modules or, under the limited power output warranty, providing additional modules to remedy the power shortfall. We also have the option to make a payment for the then-current market price of modules to resolve the claims. Such limited module warranties are standard for module sales and may be transferred from the original purchasers of the solar modules to subsequent purchasers upon resale.

As an alternative form of our standard limited module power output warranty, we also offer an aggregated or system-level limited module performance warranty. This system-level limited module performance warranty is designed for utility-scale systems and provides 25-year system-level energy degradation protection. In addition, this warranty represents a practical expedient to address the challenge of identifying, from the potential millions of modules installed in a utility-scale system, individual modules that may be performing below warranty thresholds by focusing on the aggregate energy generated by the system rather than the power output of individual modules. The system-level module performance warranty typically is calculated as a percentage of a system's expected energy production, adjusted for certain actual site conditions, with the warranted level of performance declining each year in a linear fashion, but never falling below 80% during the term of the warranty. In resolving claims under the system-level limited module performance warranty to restore the system to warranted performance levels, we first must validate that the root cause of the issue is due to module performance; we then have the option of either repairing or replacing the covered modules, providing supplemental modules, or making a cash payment. Consistent with our limited module power output warranty, when we elect to satisfy a warranty claim by providing replacement or supplemental modules under the system-level module performance warranty, we do not have any obligation to pay for the labor to remove or install modules.

In addition to our limited solar module warranties described above, for PV solar power systems built by us, we typically provide a limited product warranty on BoS parts for defects in engineering design, installation, and workmanship for a period of one to two years following the substantial completion of a system. In resolving claims under such BoS warranties, we have the option of remedying the defect through repair or replacement.

When we recognize revenue for module or systems sales, we accrue liabilities for the estimated future costs of meeting our limited warranty obligations. We make and revise these estimates based primarily on the number of our solar modules under warranty installed at customer locations, our historical experience with warranty claims, our monitoring of field installation sites, our internal testing of and the expected future performance of our solar modules and BoS components, and our estimated per-module replacement costs.

At December 31, 2016, our accrued liabilities for product warranties was $252.4 million. We estimate our limited product warranty liability for power output and defects in materials and workmanship under normal use and service conditions based on a warranty return rate of approximately 1% to 3% for modules covered under warranty. As of December 31, 2016, 1% change in the estimated warranty return rate would change our module warranty liability by $83.5 million, and a 1% change in the estimated warranty return rate for BoS components would not have a material impact on the associated warranty liability.

Performance Testing. For systems sales arrangements, we also conduct performance testing of a system prior to substantial completion to confirm the system meets its operational and capacity expectations noted in the EPC agreement. In addition, we may provide an energy performance test during the first or second year of a system's operation to demonstrate that the actual energy generation for the applicable year meets or exceeds the modeled energy expectation, after certain adjustments. These tests are based on meteorological, energy, and equipment performance data measured at the system's location as well as certain projections of such data over the remaining measurement period. If there is an underperformance event with regards to these tests, we may incur liquidated damages as a percentage of the EPC contract price. If necessary, we accrue estimates for liquidated damages at the end of each reporting period based on our performance testing. In certain instances, a bonus payment may be received at the end of the first year if the system performs above a specified level.

As part of our O&M service offerings, we typically offer an effective availability guarantee, which stipulates that a system will be available to generate a certain percentage of total possible energy during a specific period after adjusting for factors outside of our control as the service provider, such as weather, curtailment, outages, force majeure, and other conditions that may affect system availability. Effective availability guarantees are only offered as part of our O&M services and terminate at the end of an O&M arrangement. These guarantees are based on meteorological, energy, and equipment performance data measured at the system's location as well as certain projections of such data over the remaining measurement period. If we fail to meet the contractual threshold for these guarantees, we may incur liquidated damages for certain lost energy under the PPA. If necessary, we accrue estimates for liquidated damages at the end of each reporting period based on our effective availability calculations. Conversely, many of our O&M agreements contain provisions whereby we may receive a bonus payment if system availability exceeds a separate threshold.

Accounting for Income Taxes. We are subject to the income tax laws of the United States, and its states and municipalities, and those of the foreign jurisdictions in which we have significant business operations. These tax laws are complex and subject to different interpretations by the taxpayer and the relevant governmental taxing authorities. We must make judgments and interpretations about the application of these inherently complex tax laws when determining our provision for income taxes and must also make estimates about when in the future certain items affect taxable income in the various tax jurisdictions. Disputes over interpretations of the tax laws may be settled with the taxing authority upon examination or audit. We regularly evaluate the likelihood of assessments in each of the taxing jurisdictions resulting from current and future examinations, and we record tax liabilities as appropriate.

We establish liabilities for potential additional taxes based on our assessment of the outcome of our tax positions. Once established, we adjust the liabilities when additional information becomes available or when an event occurs requiring an adjustment. Significant judgment is required in making

these estimates and the actual cost of a tax assessment, fine, or penalty may ultimately be materially different from our recorded liabilities, if any.

In preparing our consolidated financial statements, we calculate our income tax expense based on our interpretation of the tax laws and regulations in the various jurisdictions where we conduct business. This requires us to estimate our current tax obligations, assess uncertain tax positions, and assess temporary differences between the financial statement carrying amounts and the tax basis of assets and liabilities. These temporary differences result in deferred tax assets and liabilities.

We must also assess the likelihood that each of our deferred tax assets will be realized. To the extent we believe that realization of any of our deferred tax assets is not more likely than not, we establish a valuation allowance. When we establish a valuation allowance or increase this allowance in a reporting period, we generally record a corresponding tax expense in our consolidated statement of operations. Conversely, to the extent circumstances indicate that a valuation allowance is no longer necessary, that portion of the valuation allowance is reversed, which generally reduces our overall income tax expense.

We also consider the unremitted earnings of our foreign subsidiaries and determine whether such amounts are indefinitely reinvested. No additional U.S. or non-U.S. taxes have been accrued that may be incurred if such amounts were repatriated to the United States. We have concluded that, except for the earnings of our Canadian and German subsidiaries and with respect to previously taxed income, all such accumulated earnings are currently indefinitely reinvested or that if upon repatriation no additional U.S. or non-U.S. tax would be due. If our intention to indefinitely reinvest the earnings of our foreign subsidiaries changes, additional U.S. and non-U.S. taxes may be required to be accrued.

We continually explore initiatives to better align our tax and legal entity structure with the footprint of our non-U.S. operations and recognize the tax impact of these initiatives, including changes in the assessment of uncertain tax positions, indefinite reinvestment exception assertions, and the realizability of deferred tax assets, in the period when we believe all necessary internal and external approvals associated with such initiatives have been obtained, or when the initiatives are materially complete. It is possible that the completion of one or more of these initiatives may occur within the next 12 months.

Long-Lived Asset Impairment. We assess long-lived assets classified as "held and used," including our property, plant and equipment, project assets, and PV solar power systems, for impairment whenever events or changes in circumstances arise, including consideration of technological obsolescence, that may indicate that the carrying amount of such assets may not be recoverable, and these assessments require significant judgment in determining whether such events or changes have occurred. Relevant considerations may include a significant decrease in the market price of a long-lived asset; a significant adverse change in the extent or manner in which a long-lived asset is being used or in its physical condition; a significant adverse change in the business climate that could affect the value of a long-lived asset; an accumulation of costs significantly in excess of the amount originally expected for the acquisition or construction of a long-lived asset; a current-period operating or cash flow loss combined with a history of such losses or a projection of future losses associated with the use of a long-lived asset; or a current expectation that, more likely than not, a long-lived asset will be sold or otherwise disposed of significantly before the end of its previously estimated useful life. For purposes of recognition and measurement of an impairment loss, long-lived assets are grouped with other assets and liabilities at the lowest level for which identifiable cash flows are largely independent of the cash flows of other assets and liabilities, and we must exercise judgment in assessing such groupings and levels.

When impairment indicators are present, we compare undiscounted future cash flows, including the eventual disposition of the asset group at market value, to the asset group's carrying value to determine if the asset group is recoverable. If the carrying value of the asset group exceeds the

undiscounted future cash flows, we measure any impairment by comparing the fair value of the asset group to its carrying value. Fair value is generally determined by considering (i) internally developed discounted cash flows for the asset group, (ii) actual third-party valuations, and/or (iii) information available regarding the current market value for such assets. If the fair value of an asset group is determined to be less than its the carrying value, an impairment in the amount of the difference is recorded in the period that the impairment indicator occurs. Estimating future cash flows requires significant judgment, and such projections may vary from the cash flows eventually realized.

Goodwill. Goodwill represents the excess of the purchase price of acquired businesses over the estimated fair value assigned to the individual assets acquired and liabilities assumed. We do not amortize goodwill, but instead are required to test goodwill for impairment at least annually. If necessary, we would record any impairment in accordance with ASC 350, *Intangibles—Goodwill and Other*. We perform impairment tests between scheduled annual tests in the fourth quarter if facts and circumstances indicate that it is more likely than not that the fair value of a reporting unit that has goodwill is less than its carrying value.

We may first make a qualitative assessment of whether it is more likely than not that a reporting unit's fair value is less than its carrying value to determine whether it is necessary to perform the two-step goodwill impairment test. The qualitative impairment test considers various factors including macroeconomic conditions, industry and market considerations, cost factors, the overall financial performance of a reporting unit, and any other relevant events affecting the entity or its reporting units. If we determine through the qualitative assessment that a reporting unit's fair value is more likely than not greater than its carrying value, the two-step impairment test is not required. If the qualitative assessment indicates it is more likely than not that a reporting unit's fair value is less than its carrying value, we must perform the two-step impairment test. We may also elect to proceed directly to the two-step impairment test without considering such qualitative factors.

The first step in a two-step impairment test is the comparison of the fair value of a reporting unit with its carrying amount, including goodwill. Our reporting units consist of our CdTe module manufacturing business and our fully integrated systems business. In accordance with the authoritative guidance over fair value measurements, we define the fair value of a reporting unit as the price that would be received to sell the unit as a whole in an orderly transaction between market participants at the measurement date. We primarily use the income approach methodology of valuation, which includes the discounted cash flow method, to estimate the fair value of our reporting units.

Significant management judgment is required when estimating the fair value of our reporting units including the forecasting of future operating results and the selection of discount and expected future growth rates that we use in determining the projected cash flows. If the estimated fair value of a reporting unit exceeds its carrying value, goodwill is not impaired and no further analysis is required.

If the carrying value of a reporting unit exceeds its estimated fair value in the first step, then we are required to perform the second step of the impairment test. In this step, we assign the fair value of the reporting unit calculated in step one to all of the assets and liabilities of the reporting unit, as if a market participant just acquired the reporting unit in a business combination. The excess of the fair value of the reporting unit determined in the first step of the impairment test over the total amount assigned to the assets and liabilities in the second step of the impairment test represents the implied fair value of goodwill. If the carrying value of a reporting unit's goodwill exceeds the implied fair value of goodwill, we would record an impairment loss equal to the difference. If there is no such excess, then all goodwill for a reporting unit is considered impaired.

Item 7A. ***Quantitative and Qualitative Disclosures about Market Risk***

Foreign Currency Exchange Risk

Our primary foreign currency exposures are cash flow exposure, transaction exposure, and earnings translation exposure.

Cash Flow Exposure. We expect certain of our subsidiaries to have future cash flows that will be denominated in currencies other than the subsidiaries' functional currencies. Changes in the exchange rates between the functional currencies of our subsidiaries and the other currencies in which they transact will cause fluctuations in the cash flows we expect to receive or pay when these cash flows are realized or settled. Accordingly, we enter into foreign exchange forward contracts to hedge a portion of these forecasted cash flows. These foreign exchange forward contracts qualify for accounting as cash flow hedges in accordance with ASC 815, and we designated them as such. We initially report the effective portion of a derivative's unrealized gain or loss in "Accumulated other comprehensive (loss) income" and subsequently reclassify amounts into earnings when the hedged transaction occurs and impacts earnings.

Our operations in Malaysia pay a portion of their operating expenses, such as associate wages and utilities, in Malaysian ringgit, exposing us to foreign currency exchange risk for those Malaysian ringgit expenses. As we continue to expand into new markets worldwide, particularly emerging markets, our total foreign currency exchange risk, in terms of both size and exchange rate volatility, and the number of foreign currencies we are exposed to could increase significantly.

For additional details on our derivative hedging instruments and activities, refer to Note 10 "Derivative Financial Instruments" to our consolidated financial statements for the year ended December 31, 2016 included in this Annual Report on Form 10-K.

Our international customers accounted for 17% of our net sales during the year ended December 31, 2016, of which 2% of such sales were denominated in Euros, Australian dollars, and Indian rupees. Our international customers accounted for 13% of our net sales during the year ended December 31, 2015, of which 40% of such sales were denominated in Australian dollars. Our international customers accounted for 10% of our net sales during the year ended December 31, 2014, of which 25% of such sales were denominated in Euros. As a result, we have exposure to foreign currency exchange risk with respect to our net sales. Fluctuations in exchange rates, particularly in the U.S. dollar to Euro, U.S. dollar to Australian dollar, and U.S. dollar to Indian rupee, may affect our gross profit and could result in foreign exchange and operating losses. Historically, most of our exposure to foreign currency exchange risk has related to currency gains and losses between the time we sign and settle our sales contracts denominated in Euros, Australian dollars, and Indian rupees. For the year ended December 31, 2016, a 10% change in the U.S. dollar to Euro, U.S. dollar to Australian dollar, or U.S. dollar to Indian rupee exchange rate would have had an aggregate impact to our net sales of $3.0 million, excluding the effect of our hedging activities. For the year ended December 31, 2015, a 10% change in the U.S. dollar to Australian dollar exchange rate would have impacted our net sales by $18.6 million, excluding the effect of our hedging activities. For the year ended December 31, 2014, a 10% change in the U.S. dollar to Euro exchange rate would have impacted our net sales by $8.8 million, excluding the effect of our hedging activities.

Transaction Exposure. Many of our subsidiaries have assets and liabilities (primarily cash, receivables, marketable securities, payables, debt, and solar module collection and recycling liabilities) that are denominated in currencies other than the subsidiaries' functional currencies. Changes in the exchange rates between the functional currencies of our subsidiaries and the other currencies in which these assets and liabilities are denominated will create fluctuations in our reported consolidated statements of operations and cash flows. We may enter into foreign exchange forward contracts or other financial instruments to economically hedge assets and liabilities against the effects of currency

exchange rate fluctuations. The gains and losses on such foreign exchange forward contracts will economically offset all or part of the transaction gains and losses that we recognize in earnings on the related foreign currency denominated assets and liabilities.

For additional details on our economic hedging instruments and activities, refer to Note 10 "Derivative Financial Instruments" to our consolidated financial statements for the year ended December 31, 2016 included in this Annual Report on Form 10-K.

If the U.S. dollar weakened by 10% against the Malaysian ringgit, we would have recorded an additional $7.5 million of foreign currency gains for the year ended December 31, 2016. Other than such Malaysian ringgit exposure, we did not have material transaction exposure to other foreign currencies as of December 31, 2016.

Earnings Translation Exposure. Fluctuations in foreign currency exchange rates create volatility in our consolidated financial statements as we are required to translate the financial statements of our subsidiaries that do not have a U.S. dollar functional currency. We do not hedge translation exposure at this time, but may, in the future, decide to purchase forward exchange contracts or other instruments to offset this impact from foreign currency exchange rate fluctuations.

In the past, such fluctuations have had an impact on our business and cash flows. For example, currency exchange rate fluctuations impacted our cash flows by $6.3 million (unfavorable), $19.3 million (unfavorable), and $19.5 million (unfavorable) for the years ended December 31, 2016, 2015, and 2014, respectively. Although we cannot predict the impact of future foreign currency exchange rate fluctuations on our business or cash flows, we believe that we will continue to have risk associated with foreign currency exchange rate fluctuations in the future.

Interest Rate Risk

Our primary interest rate risks relate to our outstanding variable rate debt, our system sales prices from the effect of interest rates on our customers' financing of such systems, and our investments in marketable securities and restricted investments.

Variable Rate Debt Exposure. We are exposed to interest rate risk as certain of our project construction credit facilities have variable interest rates, exposing us to variability in interest expense and cash flows. An increase in the Tokyo Interbank Offered Rate or equivalent variable rates would impact our cost of borrowings under our project construction credit facilities. If such variable rates changed by 100 basis points, our interest expense for the year ended December 31, 2016 would have changed by $0.1 million.

Customer Financing Exposure. We are exposed to interest rate risk because many of our systems business customers depend on debt financing to purchase a PV solar power system from us. Although the useful life of a PV solar power system is considered to be approximately 25 years, owners of our systems must generally pay for the entire cost of the system at the time of sale. As a result, many of our customers rely on debt financing to fund their up-front capital expenditures. An increase in interest rates available to finance such purchases could make it difficult for our customers to secure the financing necessary to purchase a system on favorable terms, or at all. Such factors could lower demand or the price we can charge for our systems and reduce our net sales and gross profit. In addition, we believe that a significant percentage of our customers purchase systems as an investment, funding the initial capital expenditure through a combination of equity and debt. An increase in interest rates could lower an investor's return on investment in a system or make alternative investments more attractive relative to solar power systems, which, in each case, could cause these end-users to seek alternative investments that promise higher returns.

Investments in Marketable Securities and Restricted Investments Exposure. We invest in various debt securities, which exposes us to interest rate risk. The primary objective of our investment activities is to preserve principal and provide liquidity, while at the same time maximizing the income we receive from our investments without significantly increasing risk. Some of the securities in which we invest may be subject to market risk. Accordingly, a change in prevailing interest rates may cause the market value of such investments to fluctuate. For example, if we hold a security that was issued with an interest rate fixed at the then-prevailing rate and the prevailing interest rate later rises, the market value of our investment may decline.

To provide a meaningful assessment of the interest rate risk associated with our investments in marketable securities and restricted investments, we performed a sensitivity analysis to determine the impact a change in interest rates would have on the value of our investments assuming a 100 basis point change in interest rates. During 2016, our marketable securities earned a pre-tax return of 1%, including the impact of fluctuations in the price of the underlying securities, and had a weighted average maturity of 13 months as of December 31, 2016. Based on our investment positions as of December 31, 2016, a hypothetical 100 basis point change in interest rates would result in a $6.2 million change in the market value of our investment portfolio. As of December 31, 2016, our marketable securities were comprised of foreign debt and time deposits. During 2016, our restricted investments earned a pre-tax return of 13%, including the impact of fluctuations in the price of the underlying securities, and had a weighted average maturity of approximately 18 years as of December 31, 2016. Based on our investment positions as of December 31, 2016, a hypothetical 100 basis point change in interest rates would result in a $60.5 million change in the market value of our restricted investment portfolio. As of December 31, 2016, all of our restricted investments were in foreign and U.S. government obligations.

Commodity and Component Risk

We are exposed to price risks for the raw materials, components, and energy costs used in the manufacturing and transportation of our solar modules and BoS parts used in our PV solar power systems. Also, some of our raw materials and components are sourced from a limited number of suppliers or a single supplier. We endeavor to qualify multiple suppliers using a robust qualification process. In some cases, we also enter into long-term supply contracts for raw materials and components. As a result, we remain exposed to price changes in the raw materials and components used in our solar modules. In addition, the failure of a key supplier could disrupt our supply chain, which could result in higher prices and/or a disruption in our manufacturing or construction processes. We may be unable to pass along changes in the costs of the raw materials and components for our products and systems to our customers and may be in default of our delivery obligations if we experience a manufacturing or construction disruption.

Credit Risk

We have certain financial and derivative instruments that subject us to credit risk. These consist primarily of cash, cash equivalents, marketable securities, trade accounts receivable, restricted cash and investments, notes receivable, and foreign exchange forward contracts. We are exposed to credit losses in the event of nonperformance by the counterparties to our financial and derivative instruments. We place cash, cash equivalents, marketable securities, restricted cash and investments, and foreign exchange forward contracts with various high-quality financial institutions and limit the amount of credit risk from any one counterparty. We continuously evaluate the credit standing of our counterparty financial institutions. Our net sales are primarily concentrated among a limited number of customers. We monitor the financial condition of our customers and perform credit evaluations whenever considered necessary. Depending upon the sales arrangement, we may require some form of payment

security from our customers, including parent guarantees, bank guarantees or commercial letters of credit.

Item 8. ***Financial Statements and Supplementary Data***

Consolidated Financial Statements

Our consolidated financial statements as required by this item are included in Item 15. "Exhibits and Financial Statement Schedules." See Item 15(a)(1) for a list of our consolidated financial statements.

Selected Quarterly Financial Data (Unaudited)

The following selected quarterly financial data should be read in conjunction with our consolidated financial statements, the related notes thereto and Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations." This information has been derived from our unaudited consolidated financial statements that, in our opinion, reflect all recurring adjustments necessary to fairly present this information when read in conjunction with our consolidated financial statements. The interim periods presented below for the year ended December 31, 2016 reflect the adoption of ASU 2016-09, *Compensation—Stock Compensation (Topic 718)—Improvements to Employee Share-Based Payment Accounting*. See Note 3 "Recent Accounting Pronouncements" to our consolidated financial statements for the year ended December 31, 2016 included in this Annual Report on Form 10-K for additional information. The results of operations for any quarter are not necessarily indicative of the results to be expected for any future period.

	Quarters Ended							
	Dec 31, 2016	Sep 30, 2016	Jun 30, 2016	Mar 31, 2016	Dec 31, 2015	Sep 30, 2015	Jun 30, 2015	Mar 31, 2015
	(In thousands, except per share amounts)							
Net sales	$ 480,434	$688,029	$934,381	$848,484	$942,324	$1,271,245	$896,217	$469,209
Gross profit	63,589	186,280	191,165	262,945	231,438	484,365	164,483	38,981
Operating (loss) income(1)	(765,412)	88,696	8,871	165,255	131,823	397,821	57,133	(70,113)
Net (loss) income(1)	(719,860)	169,316	14,106	178,474	164,135	349,318	93,885	(60,917)
Net (loss) income per share:								
Basic	$ (6.92)	$ 1.64	$ 0.14	$ 1.75	$ 1.62	$ 3.46	$ 0.93	$ (0.61)
Diluted	$ (6.92)	$ 1.63	$ 0.14	$ 1.73	$ 1.60	$ 3.41	$ 0.92	$ (0.61)

(1) Included restructuring and asset impairment charges of $728.9 million for the three months ended December 31, 2016, $4.3 million for the three months ended September 30, 2016, and $85.5 million for the three months ended June 30, 2016. See Note 4 "Restructuring and Asset Impairments" to our consolidated financial statements for the year ended December 31, 2016 included in this Annual Report on Form 10-K for additional information.

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 maintain "disclosure controls and procedures," as such term is defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, that are designed to ensure that information required to be disclosed by us in reports that we file or submit under the Exchange Act is recorded, processed, summarized, and reported within the time periods specified in SEC rules and forms, and that such information is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure. In designing and evaluating our disclosure controls and procedures, management recognizes that disclosure controls and procedures, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the disclosure controls and procedures are met. Additionally, in designing disclosure controls and procedures, our management is required to apply its judgment in evaluating the cost-benefit relationship of possible disclosure controls and procedures. The design of any disclosure controls and procedures is also based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions.

Based on their evaluation as of the end of the period covered by this Annual Report on Form 10-K, our Chief Executive Officer and Chief Financial Officer have concluded that our disclosure controls and procedures were effective as of that date.

Management's Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate "internal control over financial reporting," as such term is defined in Exchange Act Rules 13a-15(f) and 15d-15(f). 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 as of December 31, 2016 based on the criteria established in *Internal Control—Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO"). Our 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 in the United States of America.

Based on the results of our evaluation, our management concluded that our internal control over financial reporting was effective as of December 31, 2016. The effectiveness of our internal control over financial reporting as of December 31, 2016 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in its report which appears herein.

Changes in Internal Control over Financial Reporting

We carried out an evaluation, under the supervision and with the participation of management, including our Chief Executive Officer and Chief Financial Officer, of our "internal control over financial reporting" as defined in Exchange Act Rule 13a-15(f) and Rule 15d-15(f) to determine whether any changes in our internal control over financial reporting occurred during the year ended December 31, 2016 that materially affected, or are reasonably likely to material affect, our internal control over financial reporting.

Based on that evaluation, there were no such changes in our internal control over financial reporting that occurred during the quarter ended December 31, 2016 that materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Inherent Limitations on Effectiveness of Controls

Our management, including our Chief Executive Officer and Chief Financial Officer, do not expect that our disclosure controls and procedures or our internal control over financial reporting will prevent all errors and all fraud. Control systems, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the control systems' objectives are being met. Further, the design of any control system must reflect the fact that there are resource constraints, and the benefits of all controls must be considered relative to their costs. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, within our Company have been detected. These inherent limitations include the realities that judgments in decision-making can be faulty and that breakdowns can occur because of error or mistake. Control systems can also be circumvented by the individual acts of some persons, by collusion of two or more people, or by management override of the controls. The design of any control system is also based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions. Over time, controls may become inadequate because of changes in conditions or deterioration in the degree of compliance with policies or procedures.

Item 9B. ***Other Information***

None.

PART III

Item 10. ***Directors, Executive Officers, and Corporate Governance***

Information concerning our board of directors and audit committee will appear in our 2017 Proxy Statement, under the sections entitled "Directors" and "Corporate Governance." The information in that portion of the Proxy Statement is incorporated in this Annual Report on Form 10-K by reference.

For information with respect to our executive officers, see Item 1. "Business—Executive Officers of the Registrant."

Information concerning Section 16(a) beneficial ownership reporting compliance will appear in our 2017 Proxy Statement under the section entitled "Section 16(a) Beneficial Ownership Reporting Compliance." The information in that portion of the Proxy Statement is incorporated in this Annual Report on Form 10-K by reference.

We have adopted a Code of Business Conduct and Ethics that applies to all directors, officers, and associates of First Solar. Information concerning this code will appear in our 2017 Proxy Statement under the section entitled "Corporate Governance." The information in that portion of the Proxy Statement is incorporated in this Annual Report on Form 10-K by reference.

Item 11. ***Executive Compensation***

Information concerning executive compensation and related information will appear in our 2017 Proxy Statement under the section entitled "Executive Compensation," and information concerning the compensation committee will appear under "Corporate Governance" and "Compensation Committee Report." The information in that portion of the Proxy Statement is incorporated in this Annual Report on Form 10-K by reference.

Item 12. ***Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters***

Information concerning the security ownership of certain beneficial owners and management and related stockholder matters, including certain information regarding our equity compensation plans, will appear in our 2017 Proxy Statement under the section entitled "Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters." The information in that portion of the Proxy Statement is incorporated in this Annual Report on Form 10-K by reference.

Equity Compensation Plans

The following table sets forth certain information as of December 31, 2016 concerning securities authorized for issuance under our equity compensation plans:

Plan Category	Number of Securities to be Issued Upon Exercise of Outstanding Options and Rights (a)(1)	Weighted-Average Exercise Price of Outstanding Options and Rights (b)(2)	Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (Excluding Securities Reflected in Column (a))(c)(3)
Equity compensation plans approved by our stockholders	956,120	$—	5,909,110
Equity compensation plans not approved by our stockholders	—	—	—
Total	956,120	$—	5,909,110

(1) Includes 956,120 shares issuable upon vesting of restricted stock units ("RSUs") granted under our 2010 and 2015 Omnibus Incentive Compensation Plans.

(2) The weighted average exercise price does not take into account the shares issuable upon vesting of outstanding RSUs, which have no exercise price.

(3) Includes 764,588 shares of common stock reserved for future issuance under our stock purchase plan for employees.

See Note 18 "Share-Based Compensation" to our consolidated financial statements for the year ended December 31, 2016 included in this Annual Report on Form 10-K for further discussion on our equity compensation plans.

Item 13. ***Certain Relationships and Related Transactions, and Director Independence***

Information concerning certain relationships and related party transactions will appear in our 2017 Proxy Statement under the section entitled "Certain Relationships and Related Party Transactions." The information in that portion of the Proxy Statement is incorporated in this Annual Report on Form 10-K by reference. Information concerning director independence will appear in our 2017 Proxy Statement under the section entitled "Corporate Governance." The information in that portion of the Proxy Statement is incorporated in this Annual Report on Form 10-K by reference.

Item 14. ***Principal Accounting Fees and Services***

Information concerning principal accounting fees and services and the audit committee's pre-approval policies and procedures will appear in our 2017 Proxy Statement under the section entitled "Principal Accounting Fees and Services." The information in that portion of the Proxy Statement is incorporated in this Annual Report on Form 10-K by reference.

PART IV

Item 15. ***Exhibits and Financial Statement Schedules***

(a) The following documents are filed as part of this Annual Report on Form 10-K:

(1) Consolidated Financial Statements

Report of Independent Registered Public Accounting Firm
Consolidated Balance Sheets
Consolidated Statements of Operations
Consolidated Statements of Comprehensive Income
Consolidated Statements of Stockholders' Equity
Consolidated Statements of Cash Flows
Notes to Consolidated Financial Statements

(2) Financial Statement Schedule

Schedule II—Valuation and Qualifying Accounts

SCHEDULE II: VALUATION AND QUALIFYING ACCOUNTS
For the Years Ended December 31, 2016, 2015, and 2014

Description	Balance at Beginning of Year	Additions	Deductions	Balance at End of Year
		(In thousands)		
Allowance for doubtful accounts receivable:				
Year ended December 31, 2014	$12,310	$24	$(5,226)	$7,108
Year ended December 31, 2015	7,108	11	(7,117)	2
Year ended December 31, 2016	2	—	(2)	—

(3) Exhibits. See Item 15(b) below.

(b) Exhibits. The exhibits listed on the accompanying Index to Exhibits on this Annual Report on Form 10-K are filed, or incorporated into this Annual Report on Form 10-K by reference.

(c) Financial Statement Schedule. See Item 15(a)(2) above.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of 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 on February 22, 2017.

FIRST SOLAR, INC.

February 22, 2017

By: /s/ BRYAN SCHUMAKER
Name: Bryan Schumaker
Title: *Chief Accounting 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/ MARK R. WIDMAR Mark R. Widmar	Chief Executive Officer and Director	February 22, 2017
/s/ ALEXANDER R. BRADLEY Alexander R. Bradley	Chief Financial Officer	February 22, 2017
/s/ MICHAEL J. AHEARN Michael J. Ahearn	Chairman of the Board of Directors	February 22, 2017
/s/ SHARON L. ALLEN Sharon L. Allen	Director	February 22, 2017
/s/ RICHARD D. CHAPMAN Richard D. Chapman	Director	February 22, 2017
/s/ GEORGE A. HAMBRO George A. Hambro	Director	February 22, 2017
/s/ CRAIG KENNEDY Craig Kennedy	Director	February 22, 2017

Signature	Title	Date
/s/ JAMES F. NOLAN James F. Nolan	Director	February 22, 2017
/s/ WILLIAM J. POST William J. Post	Director	February 22, 2017
/s/ J. THOMAS PRESBY J. Thomas Presby	Director	February 22, 2017
/s/ PAUL H. STEBBINS Paul H. Stebbins	Director	February 22, 2017
/s/ MICHAEL SWEENEY Michael Sweeney	Director	February 22, 2017

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of First Solar, Inc.

In our opinion, the consolidated financial statements listed in the index appearing under Item 15(a)(1) present fairly, in all material respects, the financial position of First Solar, Inc. and its subsidiaries at December 31, 2016 and December 31, 2015, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2016 in conformity with accounting principles generally accepted in the United States of America. In addition, in our opinion, the financial statement schedule listed in the index appearing under Item 15(a)(2) presents fairly, in all material respects, the information set forth therein when read in conjunction with the related consolidated financial statements. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2016, based on criteria established in *Internal Control—Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO"). The Company's management is responsible for these financial statements and financial statement schedule, 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 these financial statements, on the financial statement schedule, and on the Company's internal control over financial reporting based on our integrated audits. We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free of material misstatement and whether effective internal control over financial reporting was maintained in all material respects. Our audits of the financial statements included examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. 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.

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

Phoenix, Arizona
February 22, 2017

FIRST SOLAR, INC. AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS
(In thousands, except share data)

	December 31, 2016	December 31, 2015
ASSETS		
Current assets:		
Cash and cash equivalents	$1,347,155	$1,126,826
Marketable securities	607,991	703,454
Accounts receivable trade, net	266,687	500,629
Accounts receivable, unbilled and retainage	205,530	59,171
Inventories	363,219	380,424
Balance of systems parts	62,776	136,889
Deferred project costs	701,105	187,940
Notes receivable, affiliates	15,000	1,276
Prepaid expenses and other current assets	217,157	248,977
Total current assets	3,786,620	3,345,586
Property, plant and equipment, net	629,142	1,284,136
PV solar power systems, net	448,601	93,741
Project assets and deferred project costs	800,770	1,111,137
Deferred tax assets, net	252,655	357,693
Restricted cash and investments	371,307	333,878
Investments in unconsolidated affiliates and joint ventures	242,361	399,805
Goodwill	14,462	84,985
Other intangibles, net	87,970	110,002
Inventories	100,512	107,759
Notes receivable, affiliates	54,737	17,887
Other assets	78,076	69,722
Total assets	$6,867,213	$7,316,331
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 148,730	$ 337,668
Income taxes payable	5,288	1,330
Accrued expenses	262,977	409,452
Current portion of long-term debt	27,966	38,090
Billings in excess of costs and estimated earnings	115,623	87,942
Payments and billings for deferred project costs	284,440	28,580
Other current liabilities	54,683	57,738
Total current liabilities	899,707	960,800
Accrued solar module collection and recycling liability	166,277	163,407
Long-term debt	160,422	251,325
Other liabilities	428,120	392,312
Total liabilities	1,654,526	1,767,844
Commitments and contingencies		
Stockholders' equity:		
Common stock, $0.001 par value per share; 500,000,000 shares authorized; 104,034,731 and 101,766,797 shares issued and outstanding at December 31, 2016 and 2015, respectively	104	102
Additional paid-in capital	2,759,211	2,742,795
Accumulated earnings	2,463,279	2,790,110
Accumulated other comprehensive (loss) income	(9,907)	15,480
Total stockholders' equity	5,212,687	5,548,487
Total liabilities and stockholders' equity	$6,867,213	$7,316,331

See accompanying notes to these consolidated financial statements.

FIRST SOLAR, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF OPERATIONS

(In thousands, except per share amounts)

	Years Ended December 31,		
	2016	2015	2014
Net sales	$2,951,328	$3,578,995	$3,391,187
Cost of sales	2,247,349	2,659,728	2,566,246
Gross profit	703,979	919,267	824,941
Operating expenses:			
Research and development	124,762	130,593	143,969
Selling, general and administrative	261,994	255,192	253,827
Production start-up	1,021	16,818	5,146
Restructuring and asset impairments	818,792	—	—
Total operating expenses	1,206,569	402,603	402,942
Operating (loss) income	(502,590)	516,664	421,999
Foreign currency loss, net	(14,007)	(6,868)	(1,461)
Interest income	25,193	22,516	18,030
Interest expense, net	(20,538)	(6,975)	(1,982)
Other income (expense), net	40,252	(5,502)	(4,485)
(Loss) income before taxes and equity in earnings of unconsolidated affiliates	(471,690)	519,835	432,101
Income tax (expense) benefit	(58,219)	6,156	(31,188)
Equity in earnings of unconsolidated affiliates, net of tax	171,945	20,430	(4,949)
Net (loss) income	$ (357,964)	$ 546,421	$ 395,964
Net (loss) income per share:			
Basic	$ (3.48)	$ 5.42	$ 3.96
Diluted	$ (3.48)	$ 5.37	$ 3.90
Weighted-average number of shares used in per share calculations:			
Basic	102,866	100,886	100,048
Diluted	102,866	101,815	101,643

See accompanying notes to these consolidated financial statements.

FIRST SOLAR, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

(In thousands)

	Years Ended December 31,		
	2016	2015	2014
Net (loss) income	$(357,964)	$546,421	$395,964
Other comprehensive (loss) income, net of tax:			
Foreign currency translation adjustments	(7,409)	(16,432)	(19,147)
Unrealized (loss) gain on marketable securities and restricted investments	(21,713)	(15,415)	90,741
Unrealized gain (loss) on derivative instruments	3,735	(2,813)	4,322
Other comprehensive (loss) income, net of tax	(25,387)	(34,660)	75,916
Comprehensive (loss) income	$(383,351)	$511,761	$471,880

See accompanying notes to these consolidated financial statements.

FIRST SOLAR, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY

(In thousands)

	Common Stock		Additional Paid-In Capital	Accumulated Earnings	Accumulated Other Comprehensive (Loss) Income	Total Equity
	Shares	Amount				
Balance, December 31, 2013	99,506	$100	$2,646,022	$1,847,725	$(25,776)	$4,468,071
Net income	—	—	—	395,964	—	395,964
Other comprehensive income	—	—	—	—	75,916	75,916
Common stock issued for share-based compensation	1,126	—	4,950	—	—	4,950
Share-based compensation tax benefits	—	—	24,505	—	—	24,505
Tax withholding related to vesting of restricted stock	(344)	—	(23,100)	—	—	(23,100)
Share-based compensation expense	—	—	45,181	—	—	45,181
Balance, December 31, 2014	100,288	100	2,697,558	2,243,689	50,140	4,991,487
Net income	—	—	—	546,421	—	546,421
Other comprehensive loss	—	—	—	—	(34,660)	(34,660)
Common stock issued for share-based compensation	1,782	2	5,886	—	—	5,888
Share-based compensation tax benefits	—	—	14,567	—	—	14,567
Tax withholding related to vesting of restricted stock	(303)	—	(18,189)	—	—	(18,189)
Share-based compensation expense	—	—	42,973	—	—	42,973
Balance, December 31, 2015	101,767	102	2,742,795	2,790,110	15,480	5,548,487
Cumulative-effect adjustment for the adoption of ASU 2016-09	—	—	2,420	31,133	—	33,553
Net loss	—	—	—	(357,964)	—	(357,964)
Other comprehensive loss	—	—	—	—	(25,387)	(25,387)
Common stock issued for share-based compensation	2,574	2	6,318	—	—	6,320
Tax withholding related to vesting of restricted stock	(306)	—	(20,407)	—	—	(20,407)
Share-based compensation expense	—	—	28,085	—	—	28,085
Balance, December 31, 2016	104,035	$104	$2,759,211	$2,463,279	$ (9,907)	$5,212,687

See accompanying notes to these consolidated financial statements.

FIRST SOLAR, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
(In thousands)

	Years Ended December 31,		
	2016	2015	2014
Cash flows from operating activities:			
Net (loss) income	$ (357,964)	$ 546,421	$ 395,964
Adjustments to reconcile net (loss) income to cash provided by (used in) operating activities:			
Depreciation, amortization and accretion	230,940	257,825	245,798
Impairment of long-lived assets, intangible assets and goodwill	838,467	14,593	5,228
Share-based compensation	28,712	44,899	43,810
Equity in earnings of unconsolidated affiliates, net of tax	(171,945)	(20,430)	4,949
Distributions received from equity method investments	18,562	—	—
Remeasurement of monetary assets and liabilities	5,442	(4,229)	7,477
Deferred income taxes	123,864	(17,534)	14,068
Gain on sales of marketable securities and restricted investments	(41,632)	—	—
Other, net	13,863	520	1,780
Changes in operating assets and liabilities:			
Accounts receivable, trade, unbilled and retainage	92,747	(340,292)	462,630
Prepaid expenses and other current assets	9,574	(38,635)	(36,805)
Inventories and balance of systems parts	95,785	113,537	(99,870)
Project assets and deferred project costs	(592,204)	(857,529)	143,047
Other assets	(19,423)	(8,484)	(5,371)
Income tax receivable and payable	(59,640)	(13,281)	(1,131)
Accounts payable	(191,642)	143,872	(53,057)
Accrued expenses and other liabilities	179,610	(67,236)	(419,053)
Accrued solar module collection and recycling liability	3,637	(79,226)	26,052
Net cash provided by (used in) operating activities	206,753	(325,209)	735,516
Cash flows from investing activities:			
Purchases of property, plant and equipment	(229,452)	(166,438)	(257,549)
Purchases of marketable securities and restricted investments	(422,609)	(556,479)	(305,396)
Proceeds from sales and maturities of marketable securities and restricted investments	525,515	353,359	227,900
Proceeds from sales of equity and cost method investments	291,502	—	—
Distributions received from equity method investments	1,502	238,980	—
Investments in notes receivable, affiliates	(4,760)	(55,163)	(72,692)
Payments received on notes receivable, affiliate	3,053	57,866	49,517
Acquisitions, net of cash acquired	(10,272)	—	(4,306)
Other investing activities	(9,959)	(28,302)	(25,292)
Net cash provided by (used in) investing activities	144,520	(156,177)	(387,818)
Cash flows from financing activities:			
Repayment of borrowings under revolving credit facility	(550,000)	—	—
Proceeds from borrowings under revolving credit facility	550,000	—	—
Repayment of long-term debt	(137,367)	(47,078)	(60,063)
Proceeds from borrowings under long-term debt, net of discounts and issuance costs	26,816	146,027	65,563
Repayment of sale-leaseback financing	(5,276)	(3,702)	—
Proceeds from sale-leaseback financing	—	44,718	—
Payments of tax withholdings for restricted shares	(20,407)	(18,189)	(23,100)
Contingent consideration payments and other financing activities	(159)	(20,569)	(29,307)
Net cash (used in) provided by financing activities	(136,393)	101,207	(46,907)
Effect of exchange rate changes on cash, cash equivalents and restricted cash	(6,306)	(19,272)	(19,487)
Net increase (decrease) in cash, cash equivalents and restricted cash	208,574	(399,451)	281,304
Cash, cash equivalents and restricted cash, beginning of the period	1,207,116	1,606,567	1,325,263
Cash, cash equivalents and restricted cash, end of the period	$1,415,690	$1,207,116	$1,606,567
Supplemental disclosure of noncash investing and financing activities:			
Equity interests retained from the partial sale of project assets	$ (3,697)	$ 324,430	$ 220,679
Property, plant and equipment acquisitions funded by liabilities	$ 28,687	$ 17,749	$ 61,130
Acquisitions currently or previously funded by liabilities and contingent consideration	$ 30,092	$ 17,988	$ 53,894
Sale of equity method investment funded by note receivable, affiliate	$ 50,000	$ —	$ —

See accompanying notes to these consolidated financial statements.

FIRST SOLAR, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. First Solar and Its Business

We are a leading global provider of comprehensive photovoltaic ("PV") solar energy solutions. We design, manufacture, and sell PV solar modules with an advanced thin-film semiconductor technology and also develop, design, construct, and sell PV solar power systems that primarily use the modules we manufacture. Additionally, we provide operations and maintenance ("O&M") services to system owners that use solar modules manufactured by us or by third-party manufacturers. We have substantial, ongoing research and development efforts focused on module and system-level innovations. We are the world's largest thin-film PV solar module manufacturer and one of the world's largest PV solar module manufacturers. Our mission is to create enduring value by enabling a world powered by clean, affordable solar energy.

2. Summary of Significant Accounting Policies

Basis of Presentation. These consolidated financial statements include the accounts of First Solar, Inc. ("FSI") and all of its subsidiaries and are prepared in accordance with accounting principles generally accepted in the United States of America ("U.S. GAAP"). We eliminated all intercompany transactions and balances during consolidation. Investments in unconsolidated affiliates in which we have less than a controlling interest are accounted for using the equity or cost method of accounting. Certain prior year balances have been reclassified to conform to the current year presentation. Such reclassifications primarily related to the adoptions of Accounting Standards Update ("ASU") 2016-09 and ASU 2016-18 as further described in Note 3 "Recent Accounting Pronouncements" to our consolidated financial statements.

Use of Estimates. The preparation of consolidated financial statements in conformity with U.S. GAAP requires us to make estimates and assumptions that affect the amounts reported in our consolidated financial statements and the accompanying notes. On an ongoing basis, we evaluate our estimates, including those related to percentage-of-completion revenue recognition, inventory valuation, recoverability of project assets and PV solar power systems, estimates of future cash flows from and the economic useful lives of long-lived assets, asset retirement obligations ("AROs"), certain accrued liabilities, income taxes and tax valuation allowances, reportable segment allocations, product warranties, solar module collection and recycling liabilities, applying the acquisition method of accounting for business combinations, and testing goodwill for impairment. Despite our intention to establish accurate estimates and reasonable assumptions, actual results could differ materially from these estimates and assumptions.

Fair Value Measurements. We measure certain financial assets and liabilities at fair value. As of December 31, 2016, our financial assets and liabilities consisted principally of cash and cash equivalents, marketable securities, trade accounts receivable, unbilled accounts receivable and retainage, notes receivable, restricted cash and investments, derivative contracts, accounts payable, income taxes payable, accrued expenses, and debt. Fair value is defined as the price that would be received from the sale of an asset or paid to transfer a liability (i.e., an exit price) on the measurement date in an orderly transaction between market participants in the principal or most advantageous market for the asset or liability. Accounting standards include disclosure requirements around fair values used for certain financial instruments and establish a fair value hierarchy. The hierarchy prioritizes valuation inputs into

three levels based on the extent to which inputs used in measuring fair value are observable in the market. Each fair value measurement is reported in one of three levels:

- Level 1—Valuation techniques in which all significant inputs are unadjusted quoted prices from active markets for assets or liabilities that are identical to the assets or liabilities being measured.
- Level 2—Valuation techniques in which significant inputs include quoted prices from active markets for assets or liabilities that are similar to the assets or liabilities being measured and/or quoted prices for assets or liabilities that are identical or similar to the assets or liabilities being measured from markets that are not active. Also, model-derived valuations in which all significant inputs and value drivers are observable in active markets are Level 2 valuation techniques.
- Level 3—Valuation techniques in which one or more significant inputs or value drivers are unobservable. Unobservable inputs are valuation technique inputs that reflect our own assumptions about the assumptions that market participants would use to price an asset or liability.

When available, we use quoted market prices to determine the fair value of an asset or liability. If quoted market prices are not available, we measure fair value using valuation techniques that use, when possible, current market-based or independently-sourced market parameters, such as interest rates and currency rates.

Cash and Cash Equivalents. We consider all highly liquid investments with original maturities of 90 days or less at the time of purchase to be cash equivalents.

Marketable Securities—Current and Noncurrent and Restricted Investments. We determine the classification of our marketable securities and restricted investments at the time of purchase and reevaluate such designation at each balance sheet date. We have classified our marketable securities and restricted investments as available-for-sale. These marketable securities and restricted investments are recorded at fair value and unrealized gains and losses are recorded to "Accumulated other comprehensive (loss) income" until realized. Realized gains and losses on sales of these marketable securities and restricted investments are reported in earnings, computed using the specific identification method.

We may sell marketable securities prior to their stated maturities after consideration of our liquidity requirements. We view unrestricted securities with maturities beyond 12 months as available to support current operations and, accordingly, classify all such securities as current assets under "Marketable securities" in the consolidated balance sheets. Restricted investments consist of long-term duration marketable securities that we hold through a custodial account to fund the estimated future costs of our solar module collection and recycling obligations. Accordingly, we classify all restricted investments as noncurrent assets under "Restricted cash and investments" in the consolidated balance sheets.

All of our available-for-sale marketable securities and restricted investments are subject to a periodic impairment review. We consider a marketable security or restricted investment to be impaired when its fair value is less than its carrying cost, in which case we would further review the marketable security or restricted investment to determine if it is other-than-temporarily impaired. When we evaluate a marketable security or restricted investment for other-than-temporary impairment, we review factors such as the length of time and the extent to which its fair value has been below its cost basis,

the financial conditions of the issuer and any changes thereto, our intent to sell, and whether it is more likely than not that we will be required to sell the marketable security or restricted investment before we have recovered its cost basis. If a marketable security or restricted investment were other-than-temporarily impaired, we would write it down through "Other income (expense), net" to its impaired value and establish that value as a new cost basis for the marketable security or restricted investment.

Derivative Instruments. We recognize derivative instruments on our consolidated balance sheets at their fair value. On the date that we enter into a derivative contract, we designate the derivative instrument as a fair value hedge, a cash flow hedge, a hedge of a net investment in a foreign operation, or a derivative instrument that will not be accounted for using hedge accounting methods. As of December 31, 2016 and 2015, all of our derivative instruments were designated either as cash flow hedges or as derivative instruments not accounted for using hedge accounting methods.

We record changes in the fair value of a derivative instrument that is highly effective and that is designated and qualifies as a cash flow hedge in "Other comprehensive (loss) income, net of tax" until our earnings are affected by the variability of cash flows of the underlying hedge. We record any hedge ineffectiveness and amounts excluded from effectiveness testing in current period earnings within "Other income (expense), net." We report changes in the fair values of derivative instruments that are not designated or do not qualify for hedge accounting in current period earnings. We classify cash flows from derivative instruments on the consolidated statements of cash flows in the same category as the item being hedged or on a basis consistent with the nature of the instrument.

We formally document all relationships between hedging instruments and the underlying hedged items, as well as our risk-management objective and strategy for undertaking various hedge transactions, at the inception of the hedge. We support all of our derivatives with documentation specifying the underlying exposure being hedged. We also formally assess (both at the hedge's inception and on an ongoing basis) whether the derivative instruments that we use in hedging transactions have been highly effective in offsetting changes in the fair value or cash flows of the underlying hedged items and whether those derivatives are expected to remain highly effective in future periods. When we determine that a derivative instrument is not highly effective as a hedge, we discontinue hedge accounting prospectively. In all situations in which we discontinue hedge accounting and the derivative instrument remains outstanding, we will carry the derivative instrument at its fair value on our consolidated balance sheets and recognize subsequent changes in its fair value in our current period earnings.

Receivables and Allowance for Doubtful Accounts. The carrying value of our receivables, net of the allowance for doubtful accounts, represents their estimated net realizable value. We estimate our allowance for doubtful accounts based on historical collection trends, the age of outstanding receivables, and existing economic conditions. If events or changes in circumstances indicate that specific receivable balances may be impaired, further consideration is given to the collectability of those balances, and the allowance is adjusted accordingly. Past-due receivable balances are written off when our internal collection efforts have been unsuccessful.

Retainage. Certain of our engineering, procurement, and construction ("EPC") contracts for PV solar power systems we build contain retainage provisions. Retainage refers to the portion of the contract price earned by us for work performed, but held for payment by our customer as a form of security until we reach certain construction milestones. We consider whether collectability of such retainage is reasonably assured in connection with our overall assessment of the collectability of amounts due or that will become due under our EPC contracts. Retainage expected to be collected

within 12 months is classified within "Accounts receivable, unbilled and retainage" on the consolidated balance sheets. Retainage expected to be collected after 12 months is classified within "Other assets" on the consolidated balance sheets. After we have met the EPC contract requirements to bill for retainage, we will reclassify such amounts to "Accounts receivable trade, net."

Inventories—Current and Noncurrent. We report our inventories at the lower of cost or net realizable value. We determine cost on a first-in, first-out basis and include both the costs of acquisition and the costs of manufacturing in our inventory costs. These costs include direct material, direct labor, and indirect manufacturing costs, including depreciation and amortization. Our capitalization of costs into inventory is based on the normal utilization of our plants. If our plant utilization is abnormally low, the portion of our indirect manufacturing costs related to the abnormal utilization level is expensed as incurred. Finished goods inventory is comprised exclusively of solar modules that have not yet been installed in a solar power plant under construction or sold to a third-party customer.

We regularly review the cost of inventories, including noncurrent inventories, against their estimated net realizable value and record write-downs if any inventories have costs in excess of their net realizable values. We also regularly evaluate the quantities and values of our inventories, including noncurrent inventories, in light of current market conditions and market trends, among other factors, and record write-downs for any quantities in excess of demand and for any new obsolescence. This evaluation considers the use of modules in our systems business, historical usage, expected demand, anticipated sales prices, desired strategic raw material requirements, new product development schedules, the effect new products might have on the sale of existing products, product obsolescence, customer concentrations, product merchantability, and other factors. Market conditions are subject to change, and actual consumption of our inventory could differ from forecasted demand.

As needed, we may purchase a critical raw material that is used in our core production process in quantities that exceed anticipated consumption within our normal operating cycle (which is 12 months). We classify such raw materials that we do not expect to consume within our normal operating cycle as noncurrent.

Balance of Systems Parts. Balance of systems ("BoS") parts represent mounting, electrical, and other construction parts purchased for PV solar power systems to be constructed or currently under construction, which we hold title to and are not yet installed in a system. Such construction parts include items such as posts, tilt brackets, tables, harnesses, combiner boxes, inverters, cables, tracker equipment, and other parts we may purchase or assemble for the systems we construct. We carry these parts at the lower of cost or net realizable value, with such value being based primarily on recoverability through installation in a system or recoverability through a sales agreement. BoS parts do not include any solar modules that we manufacture.

Asset Impairments. We assess long-lived assets classified as "held and used," including our property, plant and equipment, project assets, deferred project costs, PV solar power systems, and intangible assets for impairment whenever events or changes in circumstances arise, including consideration of technological obsolescence, that may indicate that the carrying amount of such assets may not be recoverable. These events and changes in circumstances may include a significant decrease in the market price of a long-lived asset; a significant adverse change in the extent or manner in which a long-lived asset is being used or in its physical condition; a significant adverse change in the business climate that could affect the value of a long-lived asset; an accumulation of costs significantly in excess of the amount originally expected for the acquisition or construction of a long-lived asset; a current-period operating or cash flow loss combined with a history of such losses or a projection of future losses associated with the use of a long-lived asset; or a current expectation that, more likely than not,

a long-lived asset will be sold or otherwise disposed of significantly before the end of its previously estimated useful life. For purposes of recognition and measurement of an impairment loss, long-lived assets are grouped with other assets and liabilities at the lowest level for which identifiable cash flows are largely independent of the cash flows of other assets and liabilities.

When impairment indicators are present, we compare undiscounted future cash flows, including the eventual disposition of the asset group at market value, to the asset group's carrying value to determine if the asset group is recoverable. If the carrying value of the asset group exceeds the undiscounted future cash flows, we measure any impairment by comparing the fair value of the asset group to its carrying value. Fair value is generally determined by considering (i) internally developed discounted cash flows for the asset group, (ii) actual third-party valuations, and/or (iii) information available regarding the current market value for such assets. If the fair value of an asset group is determined to be less than its the carrying value, an impairment in the amount of the difference is recorded in the period that the impairment indicator occurs. Estimating future cash flows requires significant judgment, and such projections may vary from the cash flows eventually realized.

We consider a long-lived asset to be abandoned after we have ceased use of such asset and we have no intent to use or repurpose the asset in the future. Abandoned long-lived assets are recorded at their salvage value, if any.

We classify long-lived assets we plan to sell, excluding project assets and PV solar power systems, as held for sale on our consolidated balance sheets only after certain criteria have been met including: (i) management has the authority and commits to a plan to sell the asset; (ii) the asset is available for immediate sale in its present condition; (iii) an active program to locate a buyer and the plan to sell the asset have been initiated; (iv) the sale of the asset is probable within 12 months; (v) the asset is being actively marketed at a reasonable sales price relative to its current fair value; and (vi) it is unlikely that the plan to sell will be withdrawn or that significant changes to the plan will be made. We record assets held for sale at the lower of their carrying value or fair value less costs to sell. If, due to unanticipated circumstances, such assets are not sold in the 12 months after being classified as held for sale, then held for sale classification will continue as long as the above criteria are still met.

Property, Plant and Equipment. We report our property, plant and equipment at cost, less accumulated depreciation. Cost includes the price paid to acquire or construct the assets, required installation costs, interest capitalized during the construction period, and any expenditures that substantially add to the value of or substantially extend the useful life of the assets. We expense repair and maintenance costs at the time we incur them.

We begin depreciation for our property, plant and equipment when they are placed in service. We consider such assets to be placed in service when they are both in the location and condition for their intended use.

We compute depreciation expense using the straight-line method over the estimated useful lives of assets, as presented in the table below. We depreciate leasehold improvements over the shorter of their estimated useful lives or the remaining term of the lease. The estimated useful life of an asset is

reassessed whenever applicable facts and circumstances indicate a change in the estimated useful life of such asset has occurred.

	Useful Lives in Years
Buildings and building improvements	25 - 40
Manufacturing machinery and equipment	5 - 7
Furniture, fixtures, computer hardware, and computer software	3 - 7
Leasehold improvements	up to 15

As further described in Note 4 "Restructuring and Asset Impairments," we recently introduced our next generation module technology, Series 6™ ("Series 6"), which is expected to enable the production of modules with a larger form factor, better product attributes, and a lower cost structure. Accordingly, any of our existing Series 4™ ("Series 4") manufacturing machinery and equipment that cannot be repurposed for Series 6 manufacturing is expected to be removed from service at various dates through December 31, 2018 as we transition our production lines to Series 6 technology. The useful lives of such Series 4 assets have been adjusted to align with the timing of the manufacturing transition for the individual production lines. Our Series 6 manufacturing machinery and equipment is expected to have a useful life of up to 10 years when placed in service.

PV Solar Power Systems. PV solar power systems represent solar systems that we may temporarily own and operate after being placed in service. We report our PV solar power systems at cost, less accumulated depreciation. When we are entitled to incentive tax credits for our systems, we reduce the related carrying value of the assets by the amount of the tax credits, which reduces future depreciation. Any energy generated by the systems prior to being placed in service is accounted for as a reduction in the related carrying value of the assets. We begin depreciation for PV solar power systems when they are placed in service. We compute depreciation expense for the systems using the straight-line method over the shortest of the term of the related power purchase agreement ("PPA"), the lease on the land, or 25 years. Our current PV solar power systems have estimated useful lives ranging from 15 to 25 years.

We sell energy generated by our PV solar power systems under PPAs or on an open contract basis. We recognize revenue from such sales at the time the energy is delivered to our customers or the grid (in the case of sales made on an open contract basis). For the years ended December 31, 2016 and 2015, we recognized revenue from PV solar power system energy sales of $25.9 million and $9.8 million, respectively.

Asset Retirement Obligations. We develop, construct, and operate certain project assets and PV solar power systems under power purchase or other agreements that include a requirement for the removal of the assets at the end of the term of the agreement. We recognize AROs at fair value in the period in which they are incurred, and the carrying amounts of the related project assets or PV solar power systems are correspondingly increased. AROs represent the present value of the expected costs and timing of the related decommissioning activities. At December 31, 2016 and 2015, our AROs totaled $22.4 million and $15.9 million, respectively.

Internal-Use Software Costs. We capitalize the costs related to computer software obtained or developed for internal use. Software obtained for internal use has generally been enterprise-level business and finance software that we customize to meet our specific operational requirements. The capitalized costs are amortized on a straight-line basis over the estimated useful life of the software, ranging from 3 to 7 years.

Interest Capitalization. We capitalize interest as part of the historical cost of acquiring or constructing certain assets, including property, plant and equipment, project assets, and PV solar power systems, during the period of time required to place the assets in service or, in the case of project assets, to sell the assets to customers. Interest capitalized for property, plant and equipment or PV solar power systems is depreciated over the estimated useful life of the related assets when they are placed in service. We charge interest capitalized for project assets to cost of sales when such assets are sold and we have met all revenue recognition criteria. We capitalize interest to the extent that expenditures to acquire, construct, or develop an asset have occurred and interest cost has been incurred. We cease capitalization of interest for assets in development or under construction if the assets are substantially complete or if we have sold such assets.

Project Assets. Project assets primarily consist of costs related to solar power projects in various stages of development that are capitalized prior to entering into a definitive sales agreement for the projects, including projects that may have begun commercial operation under PPAs and are actively marketed and intended to be sold. These project related costs include costs for land, development, and construction of a PV solar power system. Development costs may include legal, consulting, permitting, transmission upgrade, interconnection, and other similar costs. Once we enter into a definitive sales agreement, we reclassify project assets to deferred project costs on our consolidated balance sheets until the sale is completed and we have met all of the criteria to recognize the sale as revenue, which is typically subject to real estate revenue recognition requirements. We expense project assets and deferred project costs to cost of sales after each respective project is sold to a customer and all revenue recognition criteria have been met (matching the expensing of costs to the underlying revenue recognition method). In addition, we present all expenditures related to the development and construction of project assets or deferred project costs, whether fully or partially owned, as a component of cash flows from operating activities. We classify project assets as noncurrent due to the nature of solar power projects (long-lived assets) and the time required to complete all activities to develop, construct, and sell projects, which is typically longer than 12 months.

We review project assets for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. We consider a project commercially viable or recoverable if it is anticipated to be sold for a profit once it is either fully developed or fully constructed. We consider a partially developed or partially constructed project commercially viable or recoverable if the anticipated selling price is higher than the carrying value of the related project assets. We examine a number of factors to determine if the project is expected to be recoverable, including whether there are any changes in environmental, ecological, permitting, market pricing, or regulatory conditions that may impact the project. Such changes could cause the costs of the project to increase or the selling price of the project to decrease. If a project is not considered recoverable, we impair the respective project assets and adjust the carrying value to the estimated fair value, with the resulting impairment recorded within "Selling, general and administrative" expense.

Deferred Project Costs. Deferred project costs represent (i) costs that we capitalize as project assets for arrangements that we account for as real estate transactions after we have entered into a definitive sales arrangement, but before the sale is completed or before we have met all criteria to recognize the sale as revenue, (ii) recoverable pre-contract costs that we capitalize for arrangements accounted for as long-term construction contracts prior to entering into a definitive sales agreement, or (iii) costs that we capitalize for arrangements accounted for as long-term construction contracts after we have signed a definitive sales agreement, but before all revenue recognition criteria have been met. We classify deferred project costs as current if completion of the sale and the meeting of all revenue recognition criteria are expected within the next 12 months.

If a project is completed and begins commercial operation prior to entering into or the closing of a sales arrangement, the completed project will remain in project assets or deferred project costs until the earliest of the closing of the sale of such project, our decision to temporarily hold such project, or one year from the project's commercial operations date. Any income generated by a project while it remains within project assets or deferred project costs is accounted for as a reduction to our basis in the project, which at the time of sale and meeting all revenue recognition criteria will be recorded within cost of sales.

The following table summarizes the balance sheet classification of project assets and deferred project costs:

Milestone	Arrangements Accounted for under ASC 360-20 (Real Estate Sales)	Arrangements Accounted for under ASC 605-35 (Long-Term Construction Contracts)
Execution of a definitive sales arrangement, but all revenue recognition criteria are not yet met	Deferred project costs	Deferred project costs
Pre-execution of a definitive sales arrangement	Project asset	Deferred project costs (recoverable pre-contract costs)

Accounts Receivable, Unbilled. Accounts receivable, unbilled represents revenue that has been recognized in advance of billing the customer, which is common for long-term construction contracts. For example, we recognize revenue from contracts for the construction and sale of PV solar power systems, which include the sale of such assets over the construction period using applicable accounting methods. One such method is the percentage-of-completion method, which recognizes revenue and gross profit as work is performed based on the relationship between actual costs incurred compared to the total estimated costs for the contract. Under this accounting method, revenue could be recognized under applicable revenue recognition criteria in advance of billing the customer, resulting in an amount recorded to "Accounts receivable, unbilled and retainage." Once we meet the billing criteria under a construction contract, we bill our customer accordingly and reclassify the "Accounts receivable, unbilled and retainage" to "Accounts receivable trade, net." Billing requirements vary by contract but are generally structured around completion of certain construction milestones.

Billings in Excess of Costs and Estimated Earnings. The liability "Billings in excess of costs and estimated earnings" represents billings made or payments received in excess of revenue recognized on contracts accounted for under the percentage-of-completion method. Typically, billings are made based on the completion of certain construction milestones as provided for in the sales arrangement, and the timing of revenue recognition may be different from when we can bill or collect from a customer.

Payments and Billings for Deferred Project Costs. The liability "Payments and billings for deferred project costs" represents customer payments received or customer billings made under the terms of solar power project related sales contracts for which all revenue recognition criteria for real estate transactions have not yet been met. The associated solar power project costs are included within deferred project costs. We classify such amounts as current if all revenue recognition criteria are expected to be met within the next 12 months, consistent with the classification of the associated deferred project costs.

Deferred Revenue. Deferred revenue consists of payments received in advance of meeting all revenue recognition criteria (with the exception of payments and billings for deferred project costs) for

the sale of solar modules or services performed under our O&M agreements. We recognize deferred revenue as net sales after all revenue recognition criteria are met.

Business Combinations. We account for business combinations using the acquisition method of accounting and record intangible assets separate from goodwill. Such intangible assets are recorded at fair value based on estimates as of the date of acquisition. Goodwill is recorded as the residual amount of the purchase price consideration less the fair value assigned to the individual assets acquired and liabilities assumed as of the date of acquisition. We charge acquisition related costs that are not part of the purchase price consideration to general and administrative expense as they are incurred. These costs typically include transaction and integration costs, such as legal, accounting, and other professional fees. Contingent consideration, which represents an obligation of the acquirer to transfer additional assets or equity interests to the former owner as part of the exchange if specified future events occur or conditions are met, is accounted for at fair value either as a liability or as equity depending on the terms of the acquisition agreement.

Goodwill. Goodwill represents the excess of the purchase price of acquired businesses over the estimated fair value assigned to the individual assets acquired and liabilities assumed. We do not amortize goodwill, but instead are required to test goodwill for impairment at least annually. If necessary, we would record any impairment in accordance with Accounting Standards Codification ("ASC") 350, *Intangibles—Goodwill and Other.* We perform impairment tests between scheduled annual tests in the fourth quarter if facts and circumstances indicate that it is more likely than not that the fair value of a reporting unit that has goodwill is less than its carrying value.

We may first make a qualitative assessment of whether it is more likely than not that a reporting unit's fair value is less than its carrying value to determine whether it is necessary to perform the two-step goodwill impairment test. The qualitative impairment test considers various factors including macroeconomic conditions, industry and market considerations, cost factors, the overall financial performance of a reporting unit, and any other relevant events affecting the entity or its reporting units. If we determine through the qualitative assessment that a reporting unit's fair value is more likely than not greater than its carrying value, the two-step impairment test is not required. If the qualitative assessment indicates it is more likely than not that a reporting unit's fair value is less than its carrying value, we must perform the two-step impairment test. We may also elect to proceed directly to the two-step impairment test without considering such qualitative factors.

The first step in a two-step impairment test is the comparison of the fair value of a reporting unit with its carrying amount, including goodwill. Our reporting units consist of our module manufacturing (or "components") business and our fully integrated systems business. In accordance with the authoritative guidance over fair value measurements, we define the fair value of a reporting unit as the price that would be received to sell the unit as a whole in an orderly transaction between market participants at the measurement date. We primarily use the income approach methodology of valuation, which includes the discounted cash flow method, to estimate the fair value of our reporting units.

Significant management judgment is required when estimating the fair value of our reporting units including the forecasting of future operating results and the selection of discount and expected future growth rates that we use in determining the projected cash flows. If the estimated fair value of a reporting unit exceeds its carrying value, goodwill is not impaired and no further analysis is required.

If the carrying value of a reporting unit exceeds its estimated fair value in the first step, then we are required to perform the second step of the impairment test. In this step, we assign the fair value of the reporting unit calculated in step one to all of the assets and liabilities of the reporting unit, as if a market participant just acquired the reporting unit in a business combination. The excess of the fair value of the reporting unit determined in the first step of the impairment test over the total amount assigned to the assets and liabilities in the second step of the impairment test represents the implied fair value of goodwill. If the carrying value of a reporting unit's goodwill exceeds the implied fair value of goodwill, we would record an impairment loss equal to the difference. If there is no such excess, then all goodwill for a reporting unit is considered impaired.

See Note 6 "Goodwill and Intangible Assets" for additional information on our goodwill impairment tests.

In-Process Research and Development. In-process research and development ("IPR&D") is initially capitalized at fair value as an intangible asset with an indefinite life and assessed for impairment thereafter. When the IPR&D project is complete, it is reclassified as a definite-lived intangible asset and amortized over its estimated useful life. If an IPR&D project is abandoned, we record an impairment charge for the carrying value of the related intangible asset in the period it is abandoned.

Product Warranties. We provide a limited PV solar module warranty covering defects in materials and workmanship under normal use and service conditions for generally 10 years. We also typically warrant that modules installed in accordance with agreed-upon specifications will produce at least 97% of their labeled power output rating during the first year, with the warranty coverage reducing by 0.7% every year thereafter throughout the 25-year performance warranty period. In resolving claims under both the limited defect and power output warranties, we typically have the option of either repairing or replacing the covered modules or, under the limited power output warranty, providing additional modules to remedy the power shortfall. We also have the option to make a payment for the then-current market price of modules to resolve the claims. Such limited module warranties are standard for module sales and may be transferred from the original purchasers of the solar modules to subsequent purchasers upon resale.

As an alternative form of our standard limited module power output warranty, we also offer an aggregated or system-level limited module performance warranty. This system-level limited module performance warranty is designed for utility-scale systems and provides 25-year system-level energy degradation protection. In addition, this warranty represents a practical expedient to address the challenge of identifying, from the potential millions of modules installed in a utility-scale system, individual modules that may be performing below warranty thresholds by focusing on the aggregate energy generated by the system rather than the power output of individual modules. The system-level module performance warranty typically is calculated as a percentage of a system's expected energy production, adjusted for certain actual site conditions, with the warranted level of performance declining each year in a linear fashion, but never falling below 80% during the term of the warranty. In resolving claims under the system-level limited module performance warranty to restore the system to warranted performance levels, we first must validate that the root cause of the issue is due to module performance; we then have the option of either repairing or replacing the covered modules, providing supplemental modules, or making a cash payment. Consistent with our limited module power output warranty, when we elect to satisfy a warranty claim by providing replacement or supplemental modules under the system-level module performance warranty, we do not have any obligation to pay for the labor to remove or install modules.

In addition to our limited solar module warranties described above, for PV solar power systems built by us, we typically provide a limited product warranty on BoS parts for defects in engineering design, installation, and workmanship for a period of one to two years following the substantial completion of a system. In resolving claims under such BoS warranties, we have the option of remedying the defect through repair or replacement.

When we recognize revenue for module or systems sales, we accrue liabilities for the estimated future costs of meeting our limited warranty obligations. We make and revise these estimates based primarily on the number of our solar modules under warranty installed at customer locations, our historical experience with warranty claims, our monitoring of field installation sites, our internal testing of and the expected future performance of our solar modules and BoS components, and our estimated per-module replacement costs.

Accrued Solar Module Collection and Recycling Liability. We recognize expense at the time of sale for the estimated cost of our future obligations for collecting and recycling solar modules covered by our solar module collection and recycling program. See Note 14 "Solar Module Collection and Recycling Liability" for further information.

Income Taxes. We use the asset and liability method to account for income taxes whereby we calculate the deferred tax asset or liability account balances using the enacted tax rates and tax law applicable to when the temporary differences are expected to be recovered or settled. We establish valuation allowances, when necessary, to reduce deferred tax assets to the extent it is more likely than not that such deferred tax assets will not be realized. We do not provide deferred taxes related to the U.S. GAAP basis in excess of the outside tax basis in the investment in our foreign subsidiaries to the extent such amounts relate to indefinitely reinvested earnings and profits of such foreign subsidiaries.

Income tax expense includes (i) deferred tax expense, which generally represents the net change in the deferred tax asset or liability balance during the year plus any change in valuation allowances and (ii) current tax expense, which represents the amount of tax currently payable to or receivable from taxing authorities. We only recognize tax benefits related to uncertain tax positions that are more likely than not of being sustained upon examination. For those positions that satisfy such recognition criteria, the amount of tax benefit that we recognize is the largest amount of tax benefit that is more likely than not of being sustained on ultimate settlement of the uncertain tax position.

Foreign Currency Translation. The functional currencies of certain of our international subsidiaries are their local currencies. Accordingly, we apply period-end exchange rates to translate their assets and liabilities, and daily transaction exchange rates are used to translate their revenues, expenses, gains, and losses into U.S. dollars. We include the associated translation adjustments as a separate component of "Accumulated other comprehensive (loss) income" within stockholders' equity. The functional currency of most of our subsidiaries in Canada, Malaysia, Singapore, Chile, and Jordan is the U.S. dollar; therefore, we do not translate their financial statements. Gains and losses arising from the remeasurement of monetary assets and liabilities denominated in currencies other than a subsidiary's functional currency are included in "Foreign currency loss, net" in the period in which they occur.

Comprehensive Income. Our comprehensive income consists of our net income, the effects on our consolidated financial statements of translating the financial statements of our subsidiaries that operate in foreign currencies, the unrealized gains or losses on available-for-sale marketable securities and restricted investments, and the unrealized gains or losses on derivative instruments that qualify for and have been designated as cash flow hedges. We present our comprehensive income in the consolidated

statements of comprehensive income. Our "Accumulated other comprehensive (loss) income" is presented as a component of stockholders' equity in our consolidated balance sheets.

Per Share Data. Basic net income per share is based on the weighted effect of all common shares outstanding and is calculated by dividing net income by the weighted average number of common shares outstanding during the period. Diluted net income per share is based on the weighted effect of all common shares and dilutive potential common shares outstanding and is calculated by dividing net income by the weighted average number of common shares and dilutive potential common shares outstanding during the period.

Revenue Recognition—Systems Business. We recognize revenue for arrangements entered into by our systems business generally using two revenue recognition models, following the guidance in either ASC 605-35, *Construction-Type and Production-Type Contracts*, or ASC 360-20, *Real Estate Sales,* for arrangements which include land or land rights.

Systems business sales arrangements in which we construct a PV solar power system for a specific customer on land that is controlled by the customer, and has not been previously controlled by First Solar, are accounted for under ASC 605-35. For such sales arrangements, we use the percentage-of-completion method, as described further below, using actual costs incurred over total estimated costs to develop and construct the system (including module costs) as our standard accounting policy.

Systems business sales arrangements in which we convey control of land or land rights as part of the transaction are accounted for under ASC 360-20. Accordingly, we use one of the following revenue recognition methods, based upon an evaluation of the substance and form of the terms and conditions of such real estate sales:

(i) We apply the percentage-of-completion method, as further described below, to certain real estate sales arrangements in which we convey control of land or land rights when a sale has been consummated, we have transferred the usual risks and rewards of ownership to the buyer, the initial and continuing investment criteria have been met, we have the ability to estimate our costs and progress toward completion, and all other revenue recognition criteria have been met. When evaluating whether the usual risks and rewards of ownership have transferred to the buyer, we consider whether we have or may be contingently required to have any prohibited forms of continuing involvement with the project pursuant to ASC 360-20. The initial and continuing investment requirements, which demonstrate a buyer's commitment to honor its obligations for the sales arrangement, can typically be met through the receipt of cash or an irrevocable letter of credit from a highly creditworthy lending institution.

(ii) Depending on whether the initial and continuing investment requirements have been met and whether collectability from the buyer is reasonably assured, we may align our revenue recognition and release of project assets or deferred project costs to cost of sales with the receipt of payment from the buyer if the sale has been consummated and we have transferred the usual risks and rewards of ownership to the buyer.

For any systems business sales arrangements containing multiple deliverables not required to be accounted for under ASC 605-35 (long-term construction contracts) or ASC 360-20 (real estate sales), we analyze each activity within the sales arrangement to adhere to the separation guidelines of ASC 605-25 for multiple-element arrangements. We allocate revenue for any transactions involving multiple elements to each unit of accounting based on its relative selling price and recognize revenue

for each unit of accounting when all revenue recognition criteria for a unit of accounting have been met.

Revenue Recognition—Percentage-of-Completion. In applying the percentage-of-completion method, we use the actual costs incurred relative to the total estimated costs (including module costs) in order to determine the progress towards completion and calculate the corresponding amount of revenue and profit to recognize. Costs incurred include solar modules, direct materials, labor, subcontractor costs, and those indirect costs related to contract performance, such as indirect labor and supplies. We recognize solar module and direct material costs as incurred when such items have been installed in a system. When contracts specify that title to solar modules and direct materials transfers to the customer before installation has been performed, we will not recognize revenue or the associated costs until those materials are installed and have met all other revenue recognition requirements. We consider solar modules and direct materials to be installed when they are permanently placed or affixed to a PV solar power system as required by engineering designs. Solar modules manufactured and owned by us that will be used in our systems remain within inventory until such modules are installed in a system.

The percentage-of-completion method of revenue recognition requires us to make estimates of net contract revenues and costs to complete our projects. In making such estimates, management judgments are required to evaluate significant assumptions including the amount of net contract revenues, the cost of materials and labor, expected labor productivity, the impact of potential variances in schedule completion, and the impact of any penalties, claims, change orders, or performance incentives.

If estimated total costs on any contract are greater than the net contract revenues, we recognize the entire estimated loss in the period the loss becomes known. The cumulative effect of the revisions to estimates related to net contract revenues and costs to complete contracts, including penalties, claims, change orders, performance incentives, anticipated losses, and others are recorded in the period in which the revisions to estimates are identified and the amounts can be reasonably estimated. The effect of the changes on future periods are recognized as if the revised estimates had been used since revenue was initially recognized under the contract. Such revisions could occur in any reporting period, and the effects may be material depending on the size of the contracts or the changes in estimates.

Revenue Recognition—Operations and Maintenance. Our O&M revenue is billed and recognized as services are performed. Costs of these services are expensed in the period in which they are incurred. For O&M agreements that contain provisions whereby we may receive a bonus payment if system availability exceeds a contractual threshold, we recognize such bonuses as revenue following the completion of the applicable measurement period.

Revenue Recognition—Components Business. Our components business sells solar modules directly to third-party solar power system integrators and operators. We recognize revenue for module sales when persuasive evidence of an arrangement exists, delivery of the modules has occurred and title and risk of loss have passed to the customer, the sales price is fixed or determinable, and the collectability of the resulting receivable is reasonably assured. Under this policy, we record a trade receivable for the selling price of our module and reduce inventory for the cost of goods sold when delivery occurs in accordance with the terms of the sales contract. Our customers typically do not have extended payment terms or rights of return for our products.

Research and Development Expense. We incur research and development costs during the process of researching and developing new products and enhancing our existing products, technologies, and manufacturing processes. Our research and development costs consist primarily of employee

compensation, materials, outside services, and depreciation. We expense these costs as incurred until the resulting product has been completed, tested, and made ready for commercial manufacturing.

Restructuring and Exit Activities. We record costs associated with exit activities such as employee termination benefits that represent a one-time benefit when management approves and commits to a plan of termination, or over the future service period, if any. Other costs associated with exit activities may include contract termination costs, including costs related to leased facilities to be abandoned or subleased, and facility and employee relocation costs.

Production Start-Up. Production start-up expense consists primarily of employee compensation and other costs associated with operating a production line before it has been qualified for full production, including the cost of materials for solar modules run through the production line during the qualification phase and applicable facility related costs. Costs related to equipment upgrades and implementation of manufacturing process improvements are also included in production start-up expense as well as costs related to the selection of a new site, including related legal and regulatory costs, to the extent we cannot capitalize these expenditures.

Share-Based Compensation. We recognize share-based compensation expense on the estimated grant-date fair value of equity instruments issued as compensation to employees over the requisite service period, which is generally four years. We account for forfeitures of share-based awards as such forfeitures occur. Accordingly, when an associate's employment is terminated, all previously unvested awards granted to such associate are forfeited, which results in a benefit to share-based compensation expense in the period of such associate's termination equal to the cumulative expense recorded through the termination date for such forfeited unvested awards. We recognize share-based compensation expense for awards with graded vesting schedules on a straight-line basis over the requisite service periods for each separately vesting portion of the awards as if each award was in substance multiple awards.

Shipping and Handling Costs. We classify shipping and handling costs as a component of cost of sales. We record customer payments of shipping and handling costs as a component of net sales.

Taxes Collected from Customers and Remitted to Governmental Authorities. We do not include tax amounts collected from customers in sales transactions as a component of net sales.

Self-Insurance. We are self-insured for certain healthcare benefits provided to our U.S. employees. The liability for the self-insured benefits is limited by the purchase of stop-loss insurance. The stop-loss coverage provides payment for claims exceeding$0.2 million per covered person for any given year. Accruals for losses are made based on our claim experience and estimates based on historical data. Actual losses may differ from accrued amounts. Should actual losses exceed the amounts expected and, as a result, the recorded liabilities are determined to be insufficient, an additional expense would be recorded.

Ventures and Variable Interest Entities. In the normal course of business we establish wholly owned project companies which may be considered variable interest entities ("VIEs"). We consolidate wholly owned VIEs when we are considered the primary beneficiary of such entities. Additionally, we have, and may in the future form, joint venture type arrangements, including partnerships and partially owned limited liability companies or similar legal structures, with one or more third parties primarily to develop, construct, own, and/or sell solar power projects. These types of ventures are core to our business and long-term strategy related to providing PV solar generation solutions using our modules in key geographic markets. We analyze all of our ventures and classify them into two groups: (i) ventures

that must be consolidated because they are either not VIEs and we hold a majority voting interest, or because they are VIEs and we are the primary beneficiary and (ii) ventures that do not need to be consolidated and are accounted for under either the cost or equity method of accounting because they are either not VIEs and we hold a minority voting interest, or because they are VIEs and we are not the primary beneficiary.

Ventures are considered VIEs if (i) the total equity investment at risk is not sufficient to permit the entity to finance its activities without additional subordinated financial support; (ii) as a group, the holders of the equity investment at risk lack the ability to make certain decisions, the obligation to absorb expected losses, or the right to receive expected residual returns; or (iii) an equity investor has voting rights that are disproportionate to its economic interest and substantially all of the entity's activities are conducted on behalf of that investor. Our venture agreements typically require us to fund some form of capital for the development and construction of a project, depending upon the opportunity and the market in which our ventures are located.

We are considered the primary beneficiary of and are required to consolidate a VIE if we have the power to direct the activities that most significantly impact the VIE's economic performance and the obligation to absorb losses or the right to receive benefits of the VIE that could potentially be significant to the entity. If we determine that we do not have the power to direct the activities that most significantly impact the entity, then we are not the primary beneficiary of the VIE.

Cost and Equity Method Investments. We account for our unconsolidated ventures using either the cost or equity method of accounting depending upon whether we have the ability to exercise significant influence over the venture. As part of this evaluation, we consider our participating and protective rights in the venture as well as its legal form. We use the cost method of accounting for our investments when we do not have the ability to significantly influence the operations or financial activities of the investee. We record our cost method investments at their historical cost and subsequently record any distributions received from the net accumulated earnings of such investments as income. Distributions received from our cost method investments in excess of their earnings are considered returns of investment and are recorded as reductions in the cost of the investments. We use the equity method of accounting for our investments when we have the ability to significantly influence, but not control, the operations or financial activities of the investee. We record our equity method investments at cost and subsequently adjust their carrying amount each period for our share of the earnings or losses of the investee and other adjustments required by the equity method of accounting. Distributions received from our equity method investments are recorded as reductions in the carrying value of such investments and are classified on the consolidated statements of cash flows pursuant to the cumulative earnings approach. Under this approach, distributions received are considered returns on investment and are classified as cash inflows from operating activities unless our cumulative distributions received, less distributions received in prior periods that were determined to be returns of investment, exceed our cumulative equity in earnings recognized from the investment. When such an excess occurs, the current period distributions up to this excess are considered returns of investment and are classified as cash inflows from investing activities.

We monitor our investments, which are included in "Investments in unconsolidated affiliates and joint ventures" in the accompanying consolidated balance sheets, for impairment and record reductions in their carrying values if the carrying amount of an investment exceeds its fair value. An impairment charge is recorded when such impairment is deemed to be other-than-temporary. To determine whether an impairment is other-than-temporary, we consider our ability and intent to hold the investment until the carrying amount is fully recovered. Circumstances that indicate an other-than-temporary

impairment may have occurred include factors such as decreases in quoted market prices or declines in the operations of the investee. The evaluation of an investment for potential impairment requires us to exercise significant judgment and to make certain assumptions. The use of different judgments and assumptions could result in different conclusions. We recorded impairment losses related to our cost and equity method investments of $15.3 million, zero, and $7.1 million, respectively, during the years ended December 31, 2016, 2015, and 2014.

3. Recent Accounting Pronouncements

In May 2014, the Financial Accounting Standards Board ("FASB") issued ASU 2014-09, *Revenue from Contracts with Customers (Topic 606)*, to clarify the principles of recognizing revenue and create common revenue recognition guidance between U.S. GAAP and International Financial Reporting Standards. Under ASU 2014-09, revenue is recognized when a customer obtains control of promised goods or services and is recognized at an amount that reflects the consideration expected to be received in exchange for such goods or services. In addition, ASU 2014-09 requires disclosure of the nature, amount, timing, and uncertainty of revenue and cash flows arising from contracts with customers.

An entity has the option to apply the provisions of ASU 2014-09 either retrospectively to each prior reporting period presented (the "full retrospective method") or retrospectively with the cumulative effect of initially applying this standard recognized at the date of initial application. ASU 2014-09 is effective for fiscal years and interim periods within those years beginning after December 15, 2017, and early adoption is permitted for periods beginning after December 15, 2016. We expect to adopt ASU 2014-09 in the first quarter of 2017 using the full retrospective method. However, our ability to early adopt using the full retrospective method is subject to the completion of our analysis of certain matters and obtaining the information necessary to restate prior periods.

We expect this adoption to primarily affect our systems business sales arrangements currently accounted for under ASC 360-20, which requires us to evaluate whether such arrangements have any forms of continuing involvement that may affect the revenue or profit recognition of the transactions, including arrangements with prohibited forms of continuing involvement requiring us to reduce the potential profit on a project sale by our maximum exposure to loss. We anticipate that ASU 2014-09, which supersedes the real estate sales guidance under ASC 360-20, will require us to recognize revenue and profit from our systems business sales arrangements earlier and in a more linear fashion than our historical practice under ASC 360-20, including the estimation of certain profits that would otherwise have been deferred. For systems business sales arrangements in which we retain an interest in the project sold to a customer (i.e., a partial sale of real estate), we expect to recognize all of the revenue and profit associated with the consideration received, including the fair value of our retained ownership interest. We expect revenue recognition for our other sales arrangements, including sales of solar modules and O&M services, to remain materially consistent with our historical practice.

In February 2015, the FASB issued ASU 2015-02, *Consolidation (Topic 810)—Amendments to the Consolidation Analysis*. ASU 2015-02 modifies existing consolidation guidance related to (i) limited partnerships and similar legal entities, (ii) the evaluation of variable interests for fees paid to decision makers or service providers, (iii) the effect of fee arrangements and related parties on the primary beneficiary determination, and (iv) certain investment funds. These changes are expected to limit the number of consolidation models and place more emphasis on risk of loss when determining a controlling financial interest. The adoption of ASU 2015-02 in the first quarter of 2016 did not have a significant impact on our consolidated financial statements and associated disclosures.

In January 2016, the FASB issued ASU 2016-01, *Financial Instruments—Overall (Subtopic 825-10)—Recognition and Measurement of Financial Assets and Financial Liabilities.* ASU 2016-01 changes how entities measure certain equity investments and present changes in the fair value of financial liabilities measured under the fair value option that are attributable to their own credit. The guidance also changes certain disclosure requirements and other aspects of current U.S. GAAP. ASU 2016-01 is effective for fiscal years and interim periods within those years beginning after December 15, 2017, and early adoption is permitted for certain provisions of the guidance. We are currently evaluating the impact ASU 2016-01 will have on our consolidated financial statements and associated disclosures.

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)*, to increase transparency and comparability among organizations by recognizing a right-of-use asset and a lease liability on the balance sheet for all leases with terms longer than 12 months. Leases will be classified as either operating or financing, with such classification affecting the pattern of expense recognition in the income statement. ASU 2016-02 is effective for fiscal years and interim periods within those years beginning after December 15, 2018, and early adoption is permitted. We are currently evaluating the impact ASU 2016-02 will have on our consolidated financial statements and associated disclosures.

In March 2016, the FASB issued ASU 2016-09, *Compensation—Stock Compensation (Topic 718)—Improvements to Employee Share-Based Payment Accounting*, to simplify several aspects of the accounting for share-based payment transactions, including income tax consequences, accounting for forfeitures, classification of awards as either equity or liabilities, and classification on the statement of cash flows. The adoption of ASU 2016-09 in the fourth quarter of 2016 resulted in a $33.6 million cumulative-effect increase to retained earnings to record deferred tax assets for excess tax benefits that had previously not been recognized, as such benefits did not reduce our income taxes payable in prior periods, and a $2.4 million cumulative-effect decrease to retained earnings for previously estimated forfeitures of share-based awards. As a result of the adoption, we have also adjusted our consolidated statements of cash flows on a retrospective basis to eliminate the reclassification of excess tax benefits to cash flows from financing activities and to present payments for tax withholdings on share-based awards as cash flows from financing activities. These adjustments increased our cash flows from operating activities by $35.9 million and $54.3 million for the years ended December 31, 2015 and 2014, respectively.

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments—Credit Losses (Topic 326)*, to provide financial statement users with more useful information about expected credit losses. ASU 2016-13 also changes how entities measure credit losses on financial instruments and the timing of when such losses are recorded. ASU 2016-13 is effective for fiscal years and interim periods within those years beginning after December 15, 2019, and early adoption is permitted for periods beginning after December 15, 2018. We are currently evaluating the impact ASU 2016-13 will have on our consolidated financial statements and associated disclosures.

In August 2016, the FASB issued ASU 2016-15, *Statement of Cash Flows (Topic 230)—Classification of Certain Cash Receipts and Cash Payments*. ASU 2016-15 clarifies the classification of certain cash receipts and cash payments in the statement of cash flows with the objective of reducing the existing diversity in practice related to such classifications. As a result of the adoption of ASU 2016-15 in the third quarter of 2016, we will continue to classify distributions received from our equity method investments pursuant to the cumulative earnings approach. See Note 2 "Summary of Significant Accounting Policies—Cost and Equity Method Investments" to our consolidated financial statements for additional information on this policy.

In October 2016, the FASB issued ASU 2016-16, *Income Taxes (Topic 230)—Intra-Entity Transfers of Assets Other Than Inventory*. ASU 2016-16 requires the recognition of income tax consequences of intra-entity transfers of assets, other than inventory, when the transfer occurs. Two common examples of assets included in the scope of ASU 2016-16 are intellectual property and long-lived assets. ASU 2016-16 is effective for fiscal years and interim periods within those years beginning after December 15, 2017, and early adoption is permitted in annual reporting periods for which financial statements (interim or annual) have not been issued. We are currently evaluating the impact ASU 2016-16 will have on our consolidated financial statements and associated disclosures.

In November 2016, the FASB issued ASU 2016-18, *Statement of Cash Flows (Topic 230)—Restricted Cash*. ASU 2016-18 requires that the statement of cash flows explain the change during the period in the total of cash, cash equivalents, and amounts generally described as restricted cash or restricted cash equivalents. As a result of the adoption of ASU 2016-18 in the fourth quarter of 2016, we have included amounts generally described as restricted cash and restricted cash equivalents with cash and cash equivalents when reconciling the beginning-of-period and end-of-period total amounts shown on the statement of cash flows. This change in presentation decreased cash flows from investing activities by $44.0 million for the year ended December 31, 2015 and increased cash flows from investing activities by $124.1 million for the year ended December 31, 2014.

In January 2017, the FASB issued ASU 2017-04, *Goodwill and Other (Topic 350)—Simplifying the Test for Goodwill Impairment.* ASU 2017-04 simplifies the subsequent measurement of goodwill by eliminating Step 2 of the goodwill impairment test. In computing the implied fair value of goodwill under Step 2, an entity had to perform procedures to determine the fair value at the impairment testing date of its assets and liabilities (including unrecognized assets and liabilities) following the procedure that would be required in determining the fair value of assets acquired and liabilities assumed in a business combination. As a result of ASU 2017-04, an entity should perform its goodwill impairment test by comparing the fair value of a reporting unit with its carrying amount and then recognize an impairment charge, as necessary, for the amount by which the carrying amount exceeds the reporting unit's fair value, not to exceed the total amount of goodwill allocated to that reporting unit. ASU 2017-04 is effective for fiscal years and interim periods within those years beginning after December 15, 2019, and early adoption is permitted for interim or annual goodwill impairment tests performed after January 1, 2017. We expect to adopt ASU 2017-04 for our goodwill impairment tests in 2017.

4. Restructuring and Asset Impairments

Cadmium Telluride Module Manufacturing and Corporate Restructuring

In November 2016, our board of directors approved a set of initiatives intended to accelerate our transition to Series 6 module manufacturing and restructure our operations to reduce costs and better align the organization with our long term strategic plan. Accordingly, we expect to upgrade and replace our existing manufacturing fleet over the next two years with Series 6 manufacturing equipment, thereby enabling the production of solar modules with a larger form factor, better product attributes, and a lower cost structure.

This operational transition represented an expectation that certain of our module manufacturing assets would be sold or otherwise disposed of significantly before the end of their previously estimated useful lives. As a result of this event, we compared the undiscounted future cash flows of our module manufacturing assets to the carrying value of the asset group and determined that the group was not recoverable. Accordingly, we measured the fair value of the asset group using a combination of income

and cost valuation techniques and recorded impairment losses of $640.3 million for the year ended December 31, 2016. Such impairment losses included $120.7 million of charges related to stored Series 4 manufacturing equipment originally intended for use in previously planned manufacturing capacity expansions.

As part of these and related initiatives for the year ended December 31, 2016, we substantially reduced our workforce at our domestic and international facilities, including reductions in administrative and other staff, and incurred charges of $14.1 million for severance benefits to terminated employees. We also incurred $8.1 million of charges for the closure of ancillary foreign operations, the write-off of operating supplies, and other miscellaneous charges. Substantially all amounts associated with these restructuring and asset impairment charges related to our components segment and were classified as "Restructuring and asset impairments" on the consolidated statements of operations. We expect to incur up to $80 million of additional charges related to these actions as we complete the transition to Series 6 module manufacturing in 2017 and 2018.

The following table summarizes our cadmium telluride ("CdTe") module manufacturing and corporate restructuring activity recorded during the year ended December 31, 2016 and the remaining liability balance at December 31, 2016 (in thousands):

	Asset Impairments	Severance	Other	Total
Charges to income	$ 640,340	$14,056	$ 8,111	$ 662,507
Cash payments	—	(6,191)	(151)	(6,342)
Non-cash amounts	(640,340)	—	(7,410)	(647,750)
Ending liability balance at December 31, 2016	$ —	$ 7,865	$ 550	$ 8,415

Crystalline Silicon Module Manufacturing Restructuring

In June 2016, our executive management elected to reallocate our crystalline silicon module production capacity to support next generation CdTe module offerings. As a result, we ended production of our crystalline silicon modules to focus on our core CdTe module technology and utility-scale PV solar power systems. The majority of our crystalline silicon module manufacturing associates were expected to be redeployed in other manufacturing operations.

In connection with these restructuring activities, we incurred charges of $87.5 million during the year ended December 31, 2016, which included (i) $35.9 million of impairment charges related to certain crystalline silicon module manufacturing equipment considered abandoned for accounting purposes, (ii) $35.8 million of impairment charges for developed technology intangible assets associated with our crystalline silicon module technology, (iii) $6.1 million of goodwill impairment charges from the disposal of our crystalline silicon components reporting unit, (iv) $8.4 million of miscellaneous charges related to certain contract manufacturing agreements and the write-off of operating supplies, and (v) $1.3 million of charges for severance benefits to terminated employees. All amounts associated with these charges related to our components segment and were classified as "Restructuring and asset impairments" on the consolidated statements of operations.

Other Goodwill Impairments

As a result of our annual goodwill impairment testing in the fourth quarter of 2016, we determined that the estimated fair value of our systems reporting unit was less than its carrying value and that the implied fair value of goodwill for the systems reporting unit was zero. Accordingly, we recorded $68.8 million of goodwill impairment charges in "Restructuring and asset impairments" on the consolidated statements of operations. See Note 6 "Goodwill and Intangible Assets" to our consolidated financial statements for more information on this impairment.

5. Business Acquisitions

Enki Technology

In October 2016, we acquired 100% of the shares of Enki Technology, Inc. ("Enki"), a developer of advanced coating materials for the PV solar industry, for cash payments of $10.3 million, net of cash acquired of $0.3 million, and a promise to pay additional consideration of up to $7.0 million contingent on the achievement of certain production and module performance milestones. In connection with applying the acquisition method of accounting, $17.3 million of the purchase price consideration was assigned to an IPR&D intangible asset to be amortized over its useful life upon successful completion of the underlying projects, $4.4 million was assigned to a deferred tax liability, and $4.4 million was assigned to goodwill. The acquired IPR&D includes patents, technical information and know-how, and other proprietary information associated with the development and production of anti-reflective coating material that we expect to use in the production of our solar modules. Such technology is expected to improve our module conversion efficiency and overall durability at a lower cost structure compared to our current production processes.

6. Goodwill and Intangible Assets

Goodwill

The changes in the carrying amount of goodwill, by reporting unit, for the years ended December 31, 2016 and 2015 were as follows (in thousands):

	Balance at December 31, 2015	Acquisitions (Impairments)	Balance at December 31, 2016
Components	$ 403,420	$ 4,407	$ 407,827
Crystalline silicon components	6,097	—	6,097
Systems	68,833	—	68,833
Accumulated impairment losses	(393,365)	(74,930)	(468,295)
Total	$ 84,985	$(70,523)	$ 14,462

	Balance at December 31, 2014	Acquisitions (Impairments)	Balance at December 31, 2015
Components	$ 403,420	$—	$ 403,420
Crystalline silicon components	6,097	—	6,097
Systems	68,833	—	68,833
Accumulated impairment losses	(393,365)	—	(393,365)
Total	$ 84,985	$—	$ 84,985

Accumulated impairment losses at December 31, 2016 were $393.4 million for our components, $68.8 million for our systems, and $6.1 million for our crystalline silicon components reporting units. Accumulated impairment losses at December 31, 2015 were entirely for our components reporting unit.

2016 Goodwill Impairment Testing

Our annual impairment analysis was performed in the fourth quarter of 2016. We elected to perform the first step of the two-step goodwill impairment test instead of first performing a qualitative

goodwill impairment test. Such first-step impairment test represented the comparison of the fair value of our reporting units with their carrying amounts, including goodwill. As of the date of our testing, our reporting units were consistent with our reportable segments: components and systems. In determining the fair value of our reporting units, we used a combination of income and market based valuation techniques.

Significant estimates used in our income approach fair value calculations included: (i) future sales volumes and average selling prices per watt; (ii) cost per watt projections for module and system sales; (iii) future effective tax rates, which we estimated to be between 10% and 35%; (iii) forecasts of capital expenditures and working capital requirements; (iv) discount rates, which we estimated to range between 11.5% and 18%; and (v) future terminal values of our reporting units, which are based on their ability to exist into perpetuity. Significant estimates used in our market approach fair value calculations included business enterprise values and revenue multiples of various publicly traded companies. The underlying assumptions used in the first step of our 2016 impairment test also considered our market capitalization as of the date of our testing and current solar industry market conditions.

As a result of our testing, we determined that the estimated fair value of our components reporting unit exceeded its carrying value indicating no impairment was necessary for this reporting unit. However, we determined that the estimated fair value of our systems reporting unit was less than its carrying value, which required us to perform the second step of the goodwill impairment test for our systems reporting unit. We performed such second-step impairment test to determine the implied fair value of goodwill for the systems reporting unit, which required us to allocate the fair value of the systems reporting unit to its individual assets and liabilities, including any unrecognized intangible assets. Based on this second-step impairment test, the implied fair value of goodwill for the systems reporting unit was zero, and we recorded an impairment loss of $68.8 million.

In June 2016, we impaired $6.1 million of goodwill associated with our crystalline silicon components reporting unit as a result of the decision to end the related manufacturing operations. See Note 4 "Restructuring and Asset Impairments" to our consolidated financial statements for further discussion related to these restructuring activities.

2015 Goodwill Impairment Testing

We performed our annual impairment analysis in the fourth quarter of 2015. ASC 350-20 provides that prior to performing the traditional two-step goodwill impairment test, companies are permitted to perform a qualitative assessment of whether it is more likely than not that a reporting unit's fair value is less than its carrying value to determine whether it is necessary to perform the two-step goodwill impairment test. The qualitative impairment test considers various factors including macroeconomic conditions, industry and market considerations, cost factors, the overall financial performance of a reporting unit, and any other relevant events affecting the entity or its reporting units. We performed a qualitative assessment for each of our reporting units and concluded that it was not more likely than not that the fair value of each reporting unit was less than its carrying amount. Accordingly, the two-step goodwill impairment test for our reporting units was not considered necessary.

Intangible Assets

Intangible assets primarily include developed technologies from prior business acquisitions, certain PPAs acquired after the associated PV solar power systems were placed in service, our internally-generated intangible assets, substantially all of which were patents on technologies related to our

products and production processes, and IPR&D related to our Enki acquisition as described in Note 5 "Business Acquisitions". We record an asset for patents, after the patent has been issued, based on the legal, filing, and other costs incurred to secure them. We amortize intangible assets on a straight-line basis over their estimated useful lives once the intangible assets meet the criteria to be amortized.

The following table summarizes our intangible assets at December 31, 2016 and 2015 (in thousands):

	December 31, 2016			
	Gross Amount	Accumulated Amortization	Accumulated Impairments	Net Amount
Developed technology	$114,612	$(18,208)	$(36,215)	$60,189
Power purchase agreements	6,486	—	—	6,486
Patents	6,538	(2,498)	—	4,040
In-process research and development	17,255	—	—	17,255
Total	$144,891	$(20,706)	$(36,215)	$87,970

	December 31, 2015			
	Gross Amount	Accumulated Amortization	Accumulated Impairments	Net Amount
Developed technology	$114,565	$ (8,809)	$—	$105,756
Patents	6,070	(1,824)	—	4,246
Total	$120,635	$(10,633)	$—	$110,002

Amortization expense for our intangible assets was $10.1 million, $9.2 million, and $1.2 million for the years ended December 31, 2016, 2015, and 2014, respectively.

Estimated future amortization expense for our intangible assets was as follows at December 31, 2016 (in thousands):

	Amortization Expense
2017	$ 8,272
2018	8,272
2019	8,272
2020	8,272
2021	8,271
Thereafter	29,356
Total amortization expense	$70,715

7. Cash, Cash Equivalents, and Marketable Securities

Cash, cash equivalents, and marketable securities consisted of the following at December 31, 2016 and 2015 (in thousands):

	2016	2015
Cash and cash equivalents:		
Cash	$1,347,155	$1,126,496
Cash equivalents:		
Money market funds	—	330
Total cash and cash equivalents	1,347,155	1,126,826
Marketable securities:		
Foreign debt	567,991	663,454
Time deposits	40,000	40,000
Total marketable securities	607,991	703,454
Total cash, cash equivalents, and marketable securities	$1,955,146	$1,830,280

We classify our marketable securities as available-for-sale. Accordingly, we record them at fair value and account for the net unrealized gains and losses as part of "Accumulated other comprehensive (loss) income" until realized. We record realized gains and losses on the sale of our marketable securities in "Other income (expense), net" computed using the specific identification method. During the years ended December 31, 2016, 2015, and 2014, we realized gains on the sale of our marketable securities of $0.3 million, less than $0.1 million, and $0.2 million, respectively. See Note 11 "Fair Value Measurements" to our consolidated financial statements for information about the fair value of our marketable securities.

As of December 31, 2016, we identified three investments totaling $51.2 million that had been in a loss position for a period of time greater than 12 months with unrealized losses of $0.1 million. As of December 31, 2015, we identified two investments totaling $31.5 million that had been in a loss position for a period of time greater than 12 months with unrealized losses of less than $0.1 million. The unrealized losses were primarily due to increases in interest rates relative to rates at the time of purchase. Based on the underlying credit quality of the investments, we do not intend to sell these securities prior to the recovery of our cost basis. Therefore, we did not consider these securities to be other-than-temporarily impaired. All of our available-for-sale marketable securities are subject to a periodic impairment review. We did not identify any of our marketable securities as other-than-temporarily impaired as of December 31, 2016 and 2015.

The following tables summarize the unrealized gains and losses related to our available-for-sale marketable securities, by major security type, as of December 31, 2016 and 2015 (in thousands):

	As of December 31, 2016			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Foreign debt	$570,442	$ 2	$2,453	$567,991
Time deposits	40,000	—	—	40,000
Total	$610,442	$ 2	$2,453	$607,991

	As of December 31, 2015			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Foreign debt	$665,900	$ 9	$2,455	$663,454
Time deposits	40,000	—	—	40,000
Total	$705,900	$ 9	$2,455	$703,454

The contractual maturities of our marketable securities as of December 31, 2016 and 2015 were as follows (in thousands):

	As of December 31, 2016			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
One year or less	$283,247	$—	$ 429	$282,818
One year to two years	164,797	2	414	164,385
Two years to three years	162,398	—	1,610	160,788
Total	$610,442	$ 2	$2,453	$607,991

	As of December 31, 2015			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
One year or less	$290,377	$ 9	$ 406	$289,980
One year to two years	228,492	—	1,183	227,309
Two years to three years	187,031	—	866	186,165
Total	$705,900	$ 9	$2,455	$703,454

The net unrealized losses of $2.5 million and $2.4 million on our marketable securities as of December 31, 2016 and 2015, respectively, were primarily the result of changes in interest rates relative to rates at the time of purchase. Our investment policy requires marketable securities to be highly rated and limits the security types, issuer concentration, and duration to maturity of our marketable securities portfolio.

The following tables show gross unrealized losses and estimated fair values for those marketable securities that were in an unrealized loss position as of December 31, 2016 and 2015, aggregated by major security type and the length of time the marketable securities have been in a continuous loss position (in thousands):

	As of December 31, 2016					
	In Loss Position for Less Than 12 Months		In Loss Position for 12 Months or Greater		Total	
	Estimated Fair Value	Gross Unrealized Losses	Estimated Fair Value	Gross Unrealized Losses	Estimated Fair Value	Gross Unrealized Losses
Foreign debt	$506,835	$2,308	$51,236	$145	$558,071	$2,453
Total	$506,835	$2,308	$51,236	$145	$558,071	$2,453

	As of December 31, 2015					
	In Loss Position for Less Than 12 Months		In Loss Position for 12 Months or Greater		Total	
	Estimated Fair Value	Gross Unrealized Losses	Estimated Fair Value	Gross Unrealized Losses	Estimated Fair Value	Gross Unrealized Losses
Foreign debt	$629,033	$2,386	$31,491	$69	$660,524	$2,455
Total	$629,033	$2,386	$31,491	$69	$660,524	$2,455

8. Restricted Cash and Investments

Restricted cash and investments consisted of the following at December 31, 2016 and 2015 (in thousands):

	2016	2015
Restricted cash	$ 31,381	$ 7,764
Restricted investments	339,926	326,114
Total restricted cash and investments(1)	$371,307	$333,878

(1) There was an additional $37.2 million and $72.5 million of restricted cash included within prepaid expenses and other current assets at December 31, 2016 and 2015, respectively.

At December 31, 2016 and 2015, our restricted cash consisted of deposits held by various banks to secure certain of our letters of credit and deposits designated for the construction of systems projects and payment of amounts related to project construction credit facilities. Restricted cash for our letters of credit is classified as current or noncurrent based on the maturity date of the corresponding letter of credit. See Note 16 "Commitments and Contingencies" to our consolidated financial statements for further discussion relating to letters of credit. Restricted cash for project construction and financing is classified as current or noncurrent based on the projected use of the restricted funds.

At December 31, 2016 and 2015, our restricted investments consisted of long-term marketable securities that were held in custodial accounts to fund the estimated future costs of collecting and recycling modules covered under our solar module collection and recycling program. We classify our restricted investments as available-for-sale. Accordingly, we record them at fair value and account for

the net unrealized gains and losses as a part of "Accumulated other comprehensive (loss) income" until realized. We record realized gains and losses on the sale of our restricted investments in "Other income (expense), net" computed using the specific identification method. During 2016, we realized gains of $41.3 million on the sale of certain restricted investments primarily as part of an effort to align the currencies of the investments with those of the corresponding collection and recycling liabilities. Restricted investments are classified as noncurrent as the underlying accrued solar module collection and recycling liability is also noncurrent in nature. See Note 11 "Fair Value Measurements" to our consolidated financial statements for information about the fair value of our restricted investments.

As necessary, we fund any incremental amounts for our estimated collection and recycling obligations within 90 days of the end of each year. We determine the funding requirement, if any, based on estimated costs of collecting and recycling covered modules, estimated rates of return on our restricted investments, and an estimated solar module life of 25 years less amounts already funded in prior years. No incremental funding was required in 2016 for covered module sales in 2015, and we do not expect to fund any incremental amounts in 2017. To ensure that these funds will be available in the future regardless of any potential adverse changes in our financial condition (even in the case of our own insolvency), we have established a trust under which estimated funds are put into custodial accounts with an established and reputable bank, for which FSI, First Solar Malaysia Sdn. Bhd. ("FS Malaysia"), and First Solar Manufacturing GmbH are grantors. Only the trustee can distribute funds from the custodial accounts, and these funds cannot be accessed for any purpose other than to cover qualified costs of module collection and recycling, either by us or a third party performing the required collection and recycling services. Investments in these custodial accounts must meet certain investment quality criteria comparable to highly rated government or agency bonds. We closely monitor our exposure to European markets and maintain holdings primarily consisting of German and French sovereign debt securities that are not currently at risk of default.

The following tables summarize the unrealized gains and losses related to our restricted investments, by major security type, as of December 31, 2016 and 2015 (in thousands):

	As of December 31, 2016			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Foreign government obligations	$107,604	$62,350	$ —	$169,954
U.S. government obligations	169,294	10,468	9,790	169,972
Total	$276,898	$72,818	$9,790	$339,926

	As of December 31, 2015			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Foreign government obligations	$177,507	$75,670	$—	$253,177
U.S. government obligations	61,228	11,709	—	72,937
Total	$238,735	$87,379	$—	$326,114

As of December 31, 2016, the contractual maturities of our restricted investments were between 11 years and 20 years. As of December 31, 2015, the contractual maturities of our restricted investments were between 12 years and 21 years.

9. Consolidated Balance Sheet Details

Accounts receivable trade, net

Accounts receivable trade, net consisted of the following at December 31, 2016 and 2015 (in thousands):

	2016	2015
Accounts receivable trade, gross	$266,687	$500,631
Allowance for doubtful accounts	—	(2)
Accounts receivable trade, net	$266,687	$500,629

At December 31, 2016 and 2015, $12.2 million and $21.5 million, respectively, of our accounts receivable trade, net were secured by letters of credit, bank guarantees, or other forms of financial security issued by creditworthy financial institutions.

Accounts receivable, unbilled and retainage

Accounts receivable, unbilled and retainage consisted of the following at December 31, 2016 and 2015 (in thousands):

	2016	2015
Accounts receivable, unbilled	$199,265	$40,205
Retainage	6,265	18,966
Accounts receivable, unbilled and retainage	$205,530	$59,171

Inventories

Inventories consisted of the following at December 31, 2016 and 2015 (in thousands):

	2016	2015
Raw materials	$148,222	$159,078
Work in process	13,204	19,736
Finished goods	302,305	309,369
Inventories	$463,731	$488,183
Inventories—current	$363,219	$380,424
Inventories—noncurrent	$100,512	$107,759

Prepaid expenses and other current assets

Prepaid expenses and other current assets consisted of the following at December 31, 2016 and 2015 (in thousands):

	2016	2015
Prepaid expenses	$ 42,007	$ 51,317
Prepaid income taxes	35,336	23,673
Restricted cash	37,154	72,526
Value added tax receivables	22,308	51,473
Derivative instruments	6,078	2,691
Other current assets	74,274	47,297
Prepaid expenses and other current assets	$217,157	$248,977

Property, plant and equipment, net

Property, plant and equipment, net consisted of the following at December 31, 2016 and 2015 (in thousands):

	2016	2015
Land	$ 7,839	$ 12,063
Buildings and improvements	378,981	410,898
Machinery and equipment	1,444,442	1,824,717
Office equipment and furniture	147,833	144,773
Leasehold improvements	53,552	50,546
Construction in progress	93,164	37,734
Stored assets	17,995	138,954
Property, plant and equipment, gross	2,143,806	2,619,685
Less: accumulated depreciation	(1,514,664)	(1,335,549)
Property, plant and equipment, net	$ 629,142	$ 1,284,136

In June and November 2016, we incurred various asset impairment charges associated with the end of our crystalline silicon module manufacturing operations and transition to Series 6 module manufacturing. Such charges included the majority of the machinery and equipment ("stored assets") originally intended for use in previously planned manufacturing capacity expansions. As the remaining stored assets are neither in the condition nor location to produce modules as intended, we will not begin depreciation until such assets are placed in service. See Note 4 "Restructuring and Asset Impairments" to our consolidated financial statements for further discussion related to these restructuring activities.

Depreciation of property, plant and equipment was $211.2 million, $245.7 million, and $245.0 million for the years ended December 31, 2016, 2015, and 2014, respectively.

PV solar power systems, net

PV solar power systems, net consisted of the following at December 31, 2016 and 2015 (in thousands):

	2016	2015
PV solar power systems, gross	$464,581	$97,991
Accumulated depreciation	(15,980)	(4,250)
PV solar power systems, net	$448,601	$93,741

During 2016, we placed $391.2 million of projects in service, including certain projects in Chile and India. Such PV solar power systems are assessed for impairment whenever events or changes in circumstances arise that may indicate that the carrying amount of such systems may not be recoverable. As part of this process, we assessed our 30 megawatt ("MW") Barilla Solar project, which primarily sells electricity produced by the system on an open contract basis, for recoverability in December 2016 due to continued operating and cash flow losses combined with forecasts of continuing losses due primarily to the decline of retail electricity prices in the Electric Reliability Council of Texas (or "ERCOT") market. As a result of this event, we compared the probability-weighted undiscounted future cash flows of our Barilla Solar project to its carrying value and determined that the project was not recoverable. Accordingly, we measured the fair value of the project using an income approach valuation technique and recorded an impairment loss of $24.6 million in "Cost of sales" for the difference between the estimated fair value and carrying value of the project.

Depreciation of PV solar power systems was $11.7 million, $2.9 million, and $1.4 million for the years ended December 31, 2016, 2015, and 2014, respectively.

Capitalized interest

The cost of constructing facilities, equipment, and project assets includes interest costs incurred during the assets' construction period. The components of interest expense and capitalized interest were as follows during the years ended December 31, 2016, 2015, and 2014 (in thousands):

	2016	2015	2014
Interest cost incurred	$(26,157)	$(19,367)	$(10,828)
Interest cost capitalized—property, plant and equipment	1,878	1,335	2,324
Interest cost capitalized—project assets	3,741	11,057	6,522
Interest expense, net	$(20,538)	$ (6,975)	$ (1,982)

Project assets and deferred project costs

Project assets and deferred project costs consisted of the following at December 31, 2016 and 2015 (in thousands):

	2016	2015
Project assets—development costs, including project acquisition and land costs	$ 379,161	$ 436,375
Project assets—construction costs	382,809	674,762
Project assets	761,970	1,111,137
Deferred project costs—current	701,105	187,940
Deferred project costs—noncurrent	38,800	—
Deferred project costs	739,905	187,940
Total project assets and deferred project costs	$1,501,875	$1,299,077

Other assets

Other assets consisted of the following at December 31, 2016 and 2015 (in thousands):

	2016	2015
Notes receivable(1)	$ 7,385	$12,648
Income taxes receivable	4,230	4,071
Deferred rent	27,160	23,317
Other	39,301	29,686
Other assets	$78,076	$69,722

(1) In April 2009, we entered into a credit facility agreement with a solar power project entity of one of our customers for an available amount of €17.5 million to provide financing for a PV solar power system. The credit facility replaced a bridge loan that we had made to this entity. The credit facility bears interest at 8.0% per annum payable quarterly with the full amount due in December 2026. As of December 31, 2016 and 2015, the balance outstanding on the credit facility was €7.0 million ($7.4 million and $7.6 million, respectively, at the balance sheet dates). In February 2014, we entered into a convertible loan agreement with a strategic entity for an available amount of up to $5.0 million. As of December 31, 2015, the balance outstanding on the convertible loan was $5.0 million, which we converted into an equity interest in the entity in January 2016.

Accrued expenses

Accrued expenses consisted of the following at December 31, 2016 and 2015 (in thousands):

	2016	2015
Accrued compensation and benefits	$ 47,877	$ 63,699
Accrued property, plant and equipment	14,828	7,808
Accrued inventory and balance of systems parts	13,085	53,542
Accrued project assets and deferred project costs	71,164	145,695
Product warranty liability(1)	40,079	38,468
Other	75,944	100,240
Accrued expenses	$262,977	$409,452

(1) See Note 16 "Commitments and Contingencies" to our consolidated financial statements for further discussion of "Product warranty liability."

Other current liabilities

Other current liabilities consisted of the following at December 31, 2016 and 2015 (in thousands):

	2016	2015
Deferred revenue	$ 7,742	$17,957
Derivative instruments	6,642	16,450
Contingent consideration(1)	19,620	9,233
Financing liability(2)	5,219	5,277
Other	15,460	8,821
Other current liabilities	$54,683	$57,738

(1) See Note 16 "Commitments and Contingencies" to our consolidated financial statements for further discussion.

(2) See Note 12 "Investments in Unconsolidated Affiliates and Joint Ventures" to our consolidated financial statements for further discussion of the financing liabilities associated with our leaseback of the Maryland Solar project.

Other liabilities

Other liabilities consisted of the following at December 31, 2016 and 2015 (in thousands):

	2016	2015
Product warranty liability(1)	$212,329	$193,283
Other taxes payable(2)	24,099	66,549
Contingent consideration(1)	10,472	8,756
Financing liability(3)	33,314	36,706
Other	147,906	87,018
Other liabilities	$428,120	$392,312

(1) See Note 16 "Commitments and Contingencies" to our consolidated financial statements for further discussion on "Product warranty liability" and "Contingent consideration."

(2) See Note 20 "Income Taxes" to our consolidated financial statements for further discussion on our liabilities associated with uncertain tax positions.

(3) See Note 12 "Investments in Unconsolidated Affiliates and Joint Ventures" to our consolidated financial statements for further discussion of the financing liabilities associated with our leaseback of the Maryland Solar project.

10. Derivative Financial Instruments

As a global company, we are exposed in the normal course of business to interest rate and foreign currency risks that could affect our financial position, results of operations, and cash flows. We use derivative instruments to hedge against these risks and only hold such instruments for hedging purposes, not for speculative or trading purposes.

Depending on the terms of the specific derivative instruments and market conditions, some of our derivative instruments may be assets and others liabilities at any particular balance sheet date. We report all of our derivative instruments at fair value and account for changes in the fair value of derivative instruments within "Accumulated other comprehensive (loss) income" if the derivative instruments qualify for hedge accounting. For those derivative instruments that do not qualify for hedge accounting ("economic hedges"), we record the changes in fair value directly to earnings. See Note 11 "Fair Value Measurements" to our consolidated financial statements for information about the techniques we use to measure the fair value of our derivative instruments.

The following tables present the fair values of derivative instruments included in our consolidated balance sheets as of December 31, 2016 and 2015 (in thousands):

	December 31, 2016		
	Prepaid Expenses and Other Current Assets	Other Current Liabilities	Other Liabilities
Derivatives designated as hedging instruments:			
Foreign exchange forward contracts	$2,072	$ 387	$444
Total derivatives designated as hedging instruments	$2,072	$ 387	$444
Derivatives not designated as hedging instruments:			
Foreign exchange forward contracts	$4,006	$6,255	$ —
Total derivatives not designated as hedging instruments	$4,006	$6,255	$ —
Total derivative instruments	$6,078	$6,642	$444

	December 31, 2015		
	Prepaid Expenses and Other Current Assets	Other Current Liabilities	Other Liabilities
Derivatives designated as hedging instruments:			
Foreign exchange forward contracts	$ —	$ 132	$ 285
Cross-currency swap contract	—	6,909	13,835
Interest rate swap contract	—	16	—
Total derivatives designated as hedging instruments	$ —	$ 7,057	$14,120
Derivatives not designated as hedging instruments:			
Foreign exchange forward contracts	$2,691	$ 9,393	$ —
Total derivatives not designated as hedging instruments	$2,691	$ 9,393	$ —
Total derivative instruments	$2,691	$16,450	$14,120

The impact of offsetting balances associated with derivative instruments designated as hedging instruments is shown below (in thousands):

	December 31, 2016					
				Gross Amounts Not Offset in Consolidated Balance Sheet		
	Gross Asset (Liability)	Gross Offset in Consolidated Balance Sheet	Net Amount Recognized in Financial Statements	Financial Instruments	Cash Collateral Pledged	Net Amount
Foreign exchange forward contracts	$1,241	—	1,241	—	—	$1,241

	December 31, 2015					
				Gross Amounts Not Offset in Consolidated Balance Sheet		
	Gross Asset (Liability)	Gross Offset in Consolidated Balance Sheet	Net Amount Recognized in Financial Statements	Financial Instruments	Cash Collateral Pledged	Net Amount
Foreign exchange forward contracts	$ (417)	—	$ (417)	—	—	$ (417)
Cross-currency swap contract	(20,744)	—	(20,744)	—	—	(20,744)
Interest rate swap contract	(16)	—	(16)	—	—	(16)

The following table presents the effective amounts related to derivative instruments designated as cash flow hedges affecting accumulated other comprehensive income (loss) and our consolidated statements of operations for the years ended December 31, 2016, 2015, and 2014 (in thousands):

	Foreign Exchange Forward Contracts	Interest Rate Swap Contract	Cross Currency Swap Contract	Total
Balance in accumulated other comprehensive income (loss) at December 31, 2013	$ 4,351	$(703)	$(5,820)	$(2,172)
Amounts recognized in other comprehensive income (loss)	1,769	12	(2,846)	(1,065)
Amounts reclassified to earnings impacting:				
Cost of sales	501	—	—	501
Foreign currency loss, net	—	—	5,050	5,050
Interest expense, net	—	481	217	698
Balance in accumulated other comprehensive income (loss) at December 31, 2014	6,621	(210)	(3,399)	3,012
Amounts reclassified to net sales as a result of forecasted transactions being probable of not occurring	(1,295)	—	—	(1,295)
Amounts recognized in other comprehensive income (loss)	832	23	(9,219)	(8,364)
Amounts reclassified to earnings impacting:				
Net sales	(487)	—	—	(487)
Cost of sales	(5,509)	—	—	(5,509)
Foreign currency loss, net	—	—	10,135	10,135
Interest expense, net	—	171	466	637
Balance in accumulated other comprehensive income (loss) at December 31, 2015	162	(16)	(2,017)	(1,871)
Amounts recognized in other comprehensive income (loss)	2,513	(2)	5,108	7,619
Amounts reclassified to earnings impacting:				
Foreign currency loss, net	—	—	(4,896)	(4,896)
Interest expense, net	(119)	18	1,805	1,704
Balance in accumulated other comprehensive income (loss) at December 31, 2016	$ 2,556	$ —	$ —	$ 2,556

We recorded no amounts related to ineffective portions of our derivative instruments designated as cash flow hedges during the years ended December 31, 2016, 2015, and 2014. We recognized unrealized losses of $0.9 million and $0.1 million and unrealized gains of $1.8 million related to amounts excluded

from effectiveness testing for our foreign exchange forward contracts designated as cash flow hedges within "Other income (expense), net" during the years ended December 31, 2016, 2015, and 2014, respectively.

The following table presents amounts related to derivative instruments not designated as hedges affecting our consolidated statements of operations for the years ended December 31, 2016, 2015, and 2014 (in thousands):

		Amount of Gain (Loss) Recognized in Income		
	Income Statement Line Items	2016	2015	2014
Foreign exchange forward contracts	Foreign currency loss, net	$(14,002)	$(3,425)	$(8,066)
Foreign exchange forward contracts	Cost of sales	—	12,422	13,240

Interest Rate Risk

We use cross-currency swap and interest rate swap contracts to mitigate our exposure to interest rate fluctuations associated with certain of our debt instruments. We do not use such swap contracts for speculative or trading purposes.

On September 30, 2011, we entered into a cross-currency swap contract to hedge the floating rate foreign currency denominated loan under our Malaysian Ringgit Facility Agreement (as defined below). This swap had an initial notional value of Malaysian Ringgit ("MYR") MYR 465.0 million and entitled us to receive a three-month floating Kuala Lumpur Interbank Offered Rate interest rate while requiring us to pay a U.S. dollar fixed rate of 3.495%. Additionally, this swap hedged the foreign currency risk of the Malaysian Ringgit denominated principal and interest payments as we made swap payments in U.S. dollars and received swap payments in Malaysian Ringgits at a fixed exchange rate of 3.19 MYR to USD. This swap qualified for accounting as a cash flow hedge in accordance with ASC 815, and we designated it as such. The notional amount of the swap declined in line with our scheduled principal payments on the underlying hedged debt. In June 2016, we paid the remaining principal on the Malaysian Ringgit Facility Agreement and closed the corresponding cross-currency swap contract. As of December 31, 2015, the notional value of the cross-currency swap contract was MYR 232.6 million ($54.2 million).

On May 29, 2009, we entered into an interest rate swap contract to hedge a portion of the floating rate loans under our Malaysian credit facility, which became effective on September 30, 2009 with an initial notional value of €57.3 million and pursuant to which we are entitled to receive a six-month floating Euro Interbank Offered Rate interest rate while being required to pay a fixed rate of 2.80%. The derivative instrument qualified for accounting as a cash flow hedge in accordance with ASC 815, and we designated it as such. The notional amount of the interest rate swap contract declined in line with our scheduled principal payments on the underlying hedged debt. In March 2016, we paid the remaining principal on the Malaysian Credit Facility and closed the corresponding interest rate swap contract. As of December 31, 2015, the notional value of the interest rate swap contract was €2.2 million ($2.4 million).

Foreign Currency Exchange Risk

Cash Flow Exposure

We expect certain of our subsidiaries to have future cash flows that will be denominated in currencies other than the subsidiaries' functional currencies. Changes in the exchange rates between the functional currencies of our subsidiaries and the other currencies in which they transact will cause fluctuations in the cash flows we expect to receive or pay when these cash flows are realized or settled. Accordingly, we enter into foreign exchange forward contracts to hedge a portion of these forecasted cash flows. As of December 31, 2016 and 2015, these foreign exchange forward contracts hedged our forecasted cash flows for up to 21 months and 33 months, respectively. These foreign exchange forward contracts qualify for accounting as cash flow hedges in accordance with ASC 815, and we designated them as such. We initially report the effective portion of a derivative's unrealized gain or loss in "Accumulated other comprehensive (loss) income" and subsequently reclassify amounts into earnings when the hedged transaction occurs and impacts earnings. We determined that these derivative financial instruments were highly effective as cash flow hedges as of December 31, 2016 and 2015.

As of December 31, 2016 and 2015, the notional values associated with our foreign exchange forward contracts qualifying as cash flow hedges were as follows (notional amounts and U.S. dollar equivalents in millions):

	December 31, 2016	
Currency	Notional Amount	USD Equivalent
Indian rupee	INR 860.0	$12.7
Australian dollar	AUD 55.3	$40.0

	December 31, 2015	
Currency	Notional Amount	USD Equivalent
Indian rupee	INR1,290.0	$19.4

In the following 12 months, we expect to reclassify to earnings $2.4 million of net unrealized gains related to these forward contracts that are included in "Accumulated other comprehensive (loss) income" at December 31, 2016 as we realize the earnings effect of the related forecasted transactions. The amount we ultimately record to earnings will depend on the actual exchange rates when we realize the related forecasted transactions.

Transaction Exposure and Economic Hedging

Many of our subsidiaries have assets and liabilities (primarily cash, receivables, marketable securities, payables, debt, and solar module collection and recycling liabilities) that are denominated in currencies other than the subsidiaries' functional currencies. Changes in the exchange rates between the functional currencies of our subsidiaries and the other currencies in which these assets and liabilities are denominated will create fluctuations in our reported consolidated statements of operations and cash flows. We may enter into foreign exchange forward contracts or other financial instruments to economically hedge assets and liabilities against the effects of currency exchange rate fluctuations. The gains and losses on such foreign exchange forward contracts will economically offset all or part of the transaction gains and losses that we recognize in earnings on the related foreign currency denominated assets and liabilities.

We enter into foreign exchange forward contracts to economically hedge balance sheet and other exposures related to transactions between certain of our subsidiaries and transactions with third parties.

Such contracts are considered economic hedges and do not qualify for hedge accounting. Accordingly, we recognize gains or losses from the fluctuations in foreign exchange rates and the fair value of these derivative contracts in "Foreign currency loss, net" on our consolidated statements of operations. As of December 31, 2016 and 2015, the total net unrealized loss on our economic hedge foreign exchange forward contracts was $2.2 million and $6.7 million, respectively. These contracts mature at dates within the next 1.8 years.

As of December 31, 2016 and 2015, the notional values of our foreign exchange forward contracts that do not qualify for hedge accounting were as follows (notional amounts and U.S. dollar equivalents in millions):

	December 31, 2016		
Transaction	Currency	Notional Amount	USD Equivalent
Purchase	Euro	€64.5	$ 68.0
Sell	Euro	€103.6	$109.3
Purchase	Australian dollar	AUD 1.2	$ 0.9
Sell	Australian dollar	AUD 19.3	$ 14.0
Sell	Malaysian ringgit	MYR 24.5	$ 5.5
Sell	Canadian dollar	CAD 17.7	$ 13.2
Sell	Chilean Peso	CLP 13,611.6	$ 20.3
Purchase	Chinese yuan	CNY 24.3	$ 3.5
Purchase	Japanese yen	JPY 97.3	$ 0.8
Sell	Japanese yen	JPY 15,610.4	$133.7
Sell	British pound	GBP 0.6	$ 0.7
Sell	Indian rupee	INR 12,753.2	$187.7
Sell	South African rand	ZAR 51.2	$ 3.7

	December 31, 2015		
Transaction	Currency	Notional Amount	USD Equivalent
Purchase	Euro	€42.0	$ 45.9
Sell	Euro	€150.1	$164.0
Purchase	Australian dollar	AUD 41.1	$ 29.9
Sell	Australian dollar	AUD 89.0	$ 64.8
Purchase	Malaysian ringgit	MYR 61.4	$ 14.3
Sell	Malaysian ringgit	MYR 80.7	$ 18.8
Sell	Canadian dollar	CAD 4.5	$ 3.2
Sell	Japanese yen	JPY 8,448.7	$ 70.1
Purchase	British pound	GBP 11.1	$ 16.5
Sell	British pound	GBP 16.0	$ 23.7
Sell	Indian rupee	INR 8,939.0	$134.6
Purchase	South African rand	ZAR 41.1	$ 2.7
Sell	South African rand	ZAR 81.5	$ 5.3

11. Fair Value Measurements

The following is a description of the valuation techniques that we use to measure the fair value of assets and liabilities that we measure and report at fair value on a recurring basis:

- *Cash Equivalents.* At December 31, 2015, our cash equivalents consisted of money market funds. We value our money market cash equivalents using observable inputs that reflect quoted prices for securities with identical characteristics, and accordingly, we classify the valuation techniques that use these inputs as Level 1.
- *Marketable Securities and Restricted Investments.* At December 31, 2016 and 2015, our marketable securities consisted of foreign debt and time deposits, and our restricted investments consisted of foreign and U.S. government obligations. We value our marketable securities and restricted investments using observable inputs that reflect quoted prices for securities with identical characteristics or quoted prices for securities with similar characteristics and other observable inputs (such as interest rates that are observable at commonly quoted intervals). Accordingly, we classify the valuation techniques that use these inputs as either Level 1 or Level 2 depending on the inputs used. We also consider the effect of our counterparties' credit standings in these fair value measurements.
- *Derivative Assets and Liabilities.* At December 31, 2016 and 2015, our derivative assets and liabilities consisted of foreign exchange forward contracts involving major currencies. At December 31, 2015, our derivative assets and liabilities also consisted of a cross-currency swap contract involving certain currencies and interest rates and an interest rate swap. Since our derivative assets and liabilities are not traded on an exchange, we value them using standard industry valuation models. Where applicable, these models project future cash flows and discount the amounts to a present value using market-based observable inputs including interest rate curves, credit risk, foreign exchange rates, and forward and spot prices for currencies. These inputs are observable in active markets over the contract term of the derivative instruments we hold, and accordingly, we classify the valuation techniques as Level 2. In evaluating credit risk, we consider the effect of our counterparties' and our own credit standing in the fair value measurements of our derivative assets and liabilities, respectively.

At December 31, 2016 and 2015, the fair value measurements of our assets and liabilities that we measure on a recurring basis were as follows (in thousands):

	December 31, 2016			
		Fair Value Measurements at Reporting Date Using		
	Total Fair Value and Carrying Value on Our Balance Sheet	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets:				
Marketable securities:				
Foreign debt	$567,991	$ —	$567,991	$—
Time deposits	40,000	40,000	—	—
Restricted investments	339,926	—	339,926	—
Derivative assets	6,078	—	6,078	—
Total assets	$953,995	$40,000	$913,995	$—
Liabilities:				
Derivative liabilities	$ 7,086	$ —	$ 7,086	$—

	December 31, 2015			
		Fair Value Measurements at Reporting Date Using		
	Total Fair Value and Carrying Value on Our Balance Sheet	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets:				
Cash equivalents:				
Money market funds	$ 330	$ 330	$ —	$—
Marketable securities:				
Foreign debt	663,454	—	663,454	—
Time deposits	40,000	40,000	—	—
Restricted investments	326,114	—	326,114	—
Derivative assets	2,691	—	2,691	—
Total assets	$1,032,589	$40,330	$992,259	$—
Liabilities:				
Derivative liabilities	$ 30,570	$ —	$ 30,570	$—

Fair Value of Financial Instruments

The carrying values and fair values of our financial and derivative instruments at December 31, 2016 and 2015 were as follows (in thousands):

	December 31, 2016		December 31, 2015	
	Carrying Value	Fair Value	Carrying Value	Fair Value
Assets:				
Marketable securities	$607,991	$607,991	$703,454	$703,454
Foreign exchange forward contract assets	6,078	6,078	2,691	2,691
Restricted investments	339,926	339,926	326,114	326,114
Notes receivable—noncurrent	7,385	7,493	12,648	18,382
Notes receivable, affiliates—current	15,000	16,946	1,276	1,276
Notes receivable, affiliates—noncurrent	54,737	53,586	17,887	19,932
Liabilities:				
Long-term debt, including current maturities	$187,826	$195,160	$288,350	$294,449
Interest rate swap contract liabilities	—	—	16	16
Cross-currency swap contract liabilities	—	—	20,744	20,744
Foreign exchange forward contract liabilities	7,086	7,086	9,810	9,810

The carrying values on our consolidated balance sheets of our cash and cash equivalents, trade accounts receivable, unbilled accounts receivable and retainage, restricted cash, accounts payable, income taxes payable, and accrued expenses approximated their fair values due to their nature and relatively short maturities; therefore, we excluded them from the foregoing table.

We estimated the fair value of our notes receivable and long-term debt using a discounted cash flow approach (an income approach) or a market approach based on observable market inputs. We incorporated the credit risk of our counterparty for all asset fair value measurements and our own credit risk for all liability fair value measurements. Such fair value measurements are considered Level 2 under the fair value hierarchy.

Credit Risk

We have certain financial and derivative instruments that subject us to credit risk. These consist primarily of cash, cash equivalents, marketable securities, trade accounts receivable, restricted cash and investments, notes receivable, and foreign exchange forward contracts. We are exposed to credit losses in the event of nonperformance by the counterparties to our financial and derivative instruments. We place cash, cash equivalents, marketable securities, restricted cash and investments, and foreign exchange forward contracts with various high-quality financial institutions and limit the amount of credit risk from any one counterparty. We continuously evaluate the credit standing of our counterparty financial institutions. Our net sales are primarily concentrated among a limited number of customers. We monitor the financial condition of our customers and perform credit evaluations whenever considered necessary. Depending upon the sales arrangement, we may require some form of payment security from our customers, including parent guarantees, bank guarantees or commercial letters of credit.

12. Investments in Unconsolidated Affiliates and Joint Ventures

We have joint ventures or other strategic arrangements with partners in several markets, which are generally used to expedite our penetration of those markets and establish relationships with potential customers. We also enter into joint ventures or strategic arrangements with customers or other entities to maximize the value of particular projects. Some of these arrangements involve and are expected in the future to involve significant investments or other allocations of capital. Investments in unconsolidated entities for which we have significant influence, but not control, over the entities' operating and financial activities are accounted for under the equity method of accounting. Investments in unconsolidated entities for which we do not have the ability to exert such significant influence are accounted for under the cost method of accounting. The following table summarizes our equity and cost method investments as of December 31, 2016 and 2015 (in thousands):

	2016	2015
Equity method investments	$240,088	$375,355
Cost method investments	2,273	24,450
Investments in unconsolidated affiliates and joint ventures	$242,361	$399,805

8point3 Energy Partners LP

In June 2015, 8point3 Energy Partners LP (the "Partnership"), a limited partnership formed by First Solar and SunPower Corporation (the "Sponsors"), completed its initial public offering (the "IPO") pursuant to a Registration Statement on Form S-1, as amended. As part of the IPO, the Sponsors contributed interests in various projects to 8point3 Operating Company, LLC ("OpCo") in exchange for voting and economic interests in the entity, and the Partnership acquired an economic interest in OpCo using proceeds from the IPO. Since the formation of the Partnership, we and SunPower Corporation have, from time to time, continued to sell interests in solar projects to the Partnership. The Partnership owns and operates this portfolio of solar energy generation projects and is expected to acquire additional interests in projects from the Sponsors.

As of December 31, 2016, we owned an aggregate of 22,116,925 Class B shares representing a 28% voting interest in the Partnership, and an aggregate of 6,721,810 common units and 15,395,115 subordinated units in OpCo together representing a 28% limited liability company interest in the entity. Future quarterly distributions from OpCo are subject to a subordination period in which holders of the subordinated units are not entitled to receive any distributions until the common units have received their minimum quarterly distribution plus any arrearages in the payment of minimum distributions from prior quarters. The subordination period will end after OpCo has earned and paid minimum quarterly distributions for three years ending on or after August 31, 2018 and there are no outstanding arrearages on common units. Notwithstanding the foregoing, the subordination period could end after OpCo has earned and paid 150% of minimum quarterly distributions, plus the related distributions to incentive distribution right holders, for one year ending on or after August 31, 2016 and there are no outstanding arrearages on common units. At the end of the subordination period, all subordinated units will convert to common units on a one-for-one basis. During the year ended December 31, 2016, we received distributions from OpCo of $5.3 million. We also hold certain incentive distribution rights in OpCo, which represent a right to incremental distributions after certain distribution thresholds are met.

The Partnership is managed and controlled by its general partner, 8point3 General Partner, LLC ("General Partner"), and we account for our interest in OpCo, a subsidiary of the Partnership, under the equity method of accounting as we are able to exercise significant influence over the Partnership

due to our representation on the board of directors of its General Partner. Under the equity method of accounting, we recognize equity in earnings for our proportionate share of OpCo's net income or loss, including adjustments for the amortization of a $38.8 million remaining basis difference, which resulted from the cost of our investment differing from our proportionate share of OpCo's equity. We recognized equity in earnings, net of tax, from our investment in OpCo of $32.3 million and $20.8 million for the years ended December 31, 2016 and 2015, respectively. Our equity in earnings for the year ended December 31, 2016 also included a $7.9 million gain, net of tax, following OpCo's issuance of 8,050,000 shares to the Partnership as part of its public offering of a corresponding number of shares. As of December 31, 2016 and 2015, the carrying value of our investment in OpCo was $214.6 million and $152.5 million, respectively.

In connection with the IPO, we also entered into an agreement with a subsidiary of the Partnership to lease back one of our originally contributed projects, Maryland Solar, until December 31, 2019. Under the terms of the agreement, we make fixed rent payments to the Partnership's subsidiary and are entitled to all of the energy generated by the project. Due to our continuing involvement with the project, we account for the leaseback agreement as a financing transaction. As of December 31, 2016 and 2015, our financing obligation associated with the leaseback was $38.5 million and $42.0 million, respectively.

In December 2016, we completed the sale of our remaining 34% interest in the 300 MW Desert Stateline project ("Desert Stateline") located in San Bernardino County, California to OpCo for aggregate consideration of $329.5 million, including a $50.0 million promissory note, and accounted for the transaction as a partial sale of real estate pursuant to ASC 360-20. The promissory note is unsecured and matures in December 2020. The promissory note bears interest at 4% per annum, which rate may increase to 6% per annum (i) upon the occurrence and during the continuation of a specified event of default and (ii) in respect of amounts accrued as payments-in-kind pursuant to the terms of such promissory note. OpCo is not permitted to prepay the promissory note without the consent of certain lenders under its existing credit facility (except for certain mandatory quarterly prepayments). Until OpCo has paid in full the principal and interest on the promissory note, OpCo is restricted in its ability to: (i) acquire interests in additional projects (other than the acquisition of an 8 MW project located in Kern County, California); (ii) use the net proceeds of equity issuances except as prescribed in the promissory note; (iii) incur additional indebtedness to which the promissory note would be subordinate; and (iv) extend the maturity date under OpCo's existing credit facility. As the unconditional cash proceeds from the sale of our remaining interest in Desert Stateline exceeded the total cost of our investment, the sale met the initial and continuing investment criteria, and the promissory note was not subject to future subordination, we recognized profit on the sale of $125.1 million, net of tax, in equity in earnings for the year ended December 31, 2016.

In May 2016, we completed the sale of our two 20 MW Kingbird projects ("Kingbird") located in Kern County, California to OpCo and a third-party investor for net revenue of $57.4 million and accounted for the transaction as a partial sale of real estate pursuant to ASC 360-20. Due to certain continuing involvement associated with tax related indemnifications to the third-party investor, we did not recognize any profit on the sale as our maximum exposure to loss exceeded the profit on the transaction. All of the cash proceeds from the sale of the Kingbird project were classified as cash flows from operating activities on our consolidated statements of cash flows.

We provide O&M services to certain of the Partnership's partially owned project entities, including SG2 Holdings, LLC; Lost Hills Blackwell Holdings, LLC; NS Solar Holdings, LLC; Kingbird Solar A, LLC; Kingbird Solar B, LLC; and Desert Stateline LLC. During the years ended

December 31, 2016 and 2015, we recognized revenue of $6.1 million and $2.6 million, respectively, for such O&M services.

In June 2015, OpCo entered into a $525.0 million senior secured credit facility, consisting of a $300.0 million term loan facility, a $25.0 million delayed draw term loan facility, and a $200.0 million revolving credit facility (the "OpCo Credit Facility"). In September 2016, OpCo amended its senior secured credit facility to include an incremental $250.0 million term loan facility, which increased the maximum borrowing capacity under the OpCo Credit Facility to $775.0 million. The OpCo Credit Facility is secured by a pledge of the Sponsors' equity interests in OpCo.

Desert Stateline Holdings, LLC

In August 2015, we sold 51% of our partially constructed Desert Stateline project to a subsidiary of Southern Power Company. In March 2016, we amended the original sale agreement with Southern Power Company to include an additional 15% of the partially constructed project. Electricity generated by the system is contracted to serve a 20-year PPA with a local utility company. Our remaining 34% membership interest in the project holding company, Desert Stateline Holdings, LLC, was accounted for under the equity method of accounting as we were able to exercise significant influence over the project due to our representation on its management committee. Under the terms of the project LLC agreement, each member is entitled to receive cash distributions based on their respective membership interests, and Southern Power Company is entitled to substantially all of the project's federal tax benefits. In December 2016, we sold our 34% interest in Desert Stateline Holdings, LLC to OpCo. Prior to the sale, we recognized equity in earnings, net of tax, from our investment in Desert Stateline Holdings, LLC of $10.2 million and also received a distribution of $13.0 million for the year ended December 31, 2016. As of December 31, 2015, the carrying value of our investment was $196.9 million.

Clean Energy Collective, LLC

In November 2014, we entered into various agreements to purchase a minority ownership interest in Clean Energy Collective, LLC ("CEC"). This investment provided us with additional access to the distributed generation market and a partner to develop and market community solar offerings to North American residential customers and businesses directly on behalf of client utility companies. As part of the investment, we also received a warrant, valued at $1.8 million, to purchase additional ownership interests at prices at or above our initial investment price per unit.

In addition to our equity investment in CEC, we also entered into a loan agreement to provide CEC with term loan advances up to $15.0 million. All term loans are due in November 2017 on the third anniversary of the initial loan agreement. Interest is payable semiannually at rates ranging from 7% to 16% depending on CEC's current capital structure. As of December 31, 2016 and 2015, the balance outstanding on the term loans was $15.0 million. In February 2016, we entered into a convertible loan agreement with CEC for $4.6 million, which was funded in April 2016. The convertible loan bears interest at 10% per annum, and the outstanding principal and interest are due in February 2018 on the second anniversary of the initial loan agreement unless converted earlier pursuant to a qualified equity financing by CEC.

CEC is considered a VIE, and our 27% ownership interest in and loans to the company are considered variable interests. We account for our investment in CEC under the equity method of accounting as we concluded we are not the primary beneficiary of the company given that we do not have the power to make decisions over the activities that most significantly impact the company's economic performance. Under the equity method of accounting, we recognize equity in earnings for

our proportionate share of CEC's net income or loss including adjustments for the amortization of a basis difference resulting from the cost of our investment differing from our proportionate share of CEC's equity. During the years ended December 31, 2016 and 2015, we recognized losses, net of tax, of $3.6 million and $1.9 million, respectively, from our investment in CEC. As of December 31, 2016 and 2015, the carrying value of our investment was $10.5 million and $16.1 million, respectively.

Joint Venture with Customer

In September 2013, we contributed an immaterial amount for a 50% ownership interest in a newly formed joint venture, which was established to develop solar power projects in Europe, North Africa, the United States, and the Middle East. One of our customers also contributed an immaterial amount for the remaining 50% ownership interest in the joint venture. The project development and related activities of the entity are governed by a joint venture agreement. The intent of this agreement is to outline the general parameters of the arrangement with our customer, whereby we supply solar modules for various solar power projects and our customer develops and constructs the projects. The joint venture agreement also requires each party to consent to all decisions related to the most significant activities of the entity. There are no requirements for us to make further contributions to the joint venture, and the proceeds from the sale of any future projects are to be divided equally between us and our customer after the repayment of any project financing and project development related costs.

In 2014 and 2015, we subsequently entered into various loan agreements with solar power project entities of the joint venture pursuant to which the project entities borrowed funds for the construction of PV solar power systems in the United Kingdom. The loans bore interest at rates ranging from 6% to 8% per annum and were generally paid upon the sale of the associated project entities. As of December 31, 2016 and 2015, the balance outstanding on the loans was zero and £2.8 million ($4.2 million), respectively.

Summarized Financial Information

The following table presents summarized financial information, in the aggregate, for our significant equity method investees, as provided to us by the investees (in thousands):

	Fiscal 2016	Fiscal 2015
Summary statement of operations information:		
Net sales	$125,643	$ 7,099
Operating income (loss)	55,266	(555)
Net income(1)	63,893	8,936
Net income attributable to equity method investees(1)	190,240	111,135

	As of Fiscal 2016	As of Fiscal 2015
Summary balance sheet information:		
Current assets	$ 35,407	$ 70,135
Long-term assets	1,299,656	1,938,785
Current liabilities	26,606	150,313
Long-term liabilities	398,192	309,169
Noncontrolling interests, including redeemable noncontrolling interests	58,658	101,520

(1) The difference between Net income and Net income attributable to equity method investees is due to our investment in OpCo, which has entered into tax equity financing facilities with third-party investors that hold noncontrolling ownership interests in certain of its subsidiaries. Accordingly, earnings or losses are allocated to such tax equity investors using the Hypothetical Liquidation at Book Value (or "HLBV") method. During the fiscal 2016 and 2015 periods, OpCo allocated certain losses to such third-party investors under the HLBV method, which represented the difference between Net income and Net income attributable to equity method investees.

13. Percentage-of-Completion Changes in Estimates

We recognize revenue for certain systems business sales arrangements under the percentage-of-completion method. The percentage-of-completion method of revenue recognition requires us to make estimates of net contract revenues and costs to complete our projects. In making such estimates, management judgments are required to evaluate significant assumptions including the amount of net contract revenues, the cost of materials and labor, expected labor productivity, the impact of potential variances in schedule completion, and the impact of any penalties, claims, or performance incentives. If estimated total costs on any contract are greater than the net contract revenues, we recognize the entire estimated loss in the period the loss becomes known. The cumulative effect of the revisions to estimates related to net contract revenues and costs to complete contracts are recorded in the period in which the revisions to estimates are identified and the amounts can be reasonably estimated.

Changes in estimates for systems business sales arrangements accounted for under the percentage-of-completion method occur for a variety of reasons, including but not limited to (i) construction plan accelerations or delays, (ii) module cost forecast changes, and (iii) changes in other information used to estimate costs. Changes in estimates could have a material effect on our consolidated statements of operations. The table below outlines the impact on gross profit of the aggregate net change in systems business contract estimates (both increases and decreases) for the years ended December 31, 2016 and 2015 as well as the number of projects that comprise such aggregate net change. For purposes of the following table, we only include projects with changes in estimates that have a net impact on gross profit of at least $1.0 million during the periods presented.

Also included in the table is the net change in estimate as a percentage of the aggregate gross profit for such projects.

	2016	2015
Number of projects	8	6
Increase in gross profit resulting from net changes in estimates (in thousands)	$60,968	$31,928
Net change in estimate as percentage of aggregate gross profit for associated projects	6.8%	3.4%

14. Solar Module Collection and Recycling Liability

We voluntarily established a module collection and recycling program to collect and recycle modules sold and covered under such program once the modules reach the end of their useful lives. For customer sales contracts that include modules covered under this program, we agree to pay the costs for the collection and recycling of qualifying solar modules, and the end-users agree to notify us, disassemble their solar power systems, package the solar modules for shipment, and revert ownership rights over the modules back to us at the end of the modules' service lives. Accordingly, we record our collection and recycling obligations within "Cost of sales" at the time of sale based on the estimated cost to collect and recycle the covered solar modules. During the years ended December 31, 2016 and 2015, substantially all of our modules sold were not subject to our collection and recycling program. During the year ended December 31, 2014, 56% of our modules sold were subject to our collection and recycling program.

We estimate the cost of our collection and recycling obligations based on the present value of the expected probability-weighted future cost of collecting and recycling the solar modules, which includes estimates for the cost of packaging materials, the cost of freight from the solar module installation sites to a recycling center, the material, labor, capital costs, and scale of recycling centers, and an estimated third-party profit margin and return on risk for collection and recycling services. We base these estimates on (i) our experience collecting and recycling our solar modules, (ii) the expected timing of when our solar modules will be returned for recycling, and (iii) expected economic conditions at the time the solar modules will be collected and recycled. In the periods between the time of sale and the related settlement of the collection and recycling obligation, we accrete the carrying amount of the associated liability by applying the discount rate used for its initial measurement. We classify accretion as an operating expense within "Selling, general and administrative" expense on our consolidated statements of operations. We periodically review our estimates of expected future recycling costs and may adjust our liability accordingly.

During the year ended December 31, 2015, we completed our annual cost study of obligations under our module collection and recycling program based on certain recycling technology advancements at our manufacturing facility in Perrysburg, Ohio and reduced the associated liability by $80.0 million. The recycling technology advancements represented a significant improvement over previous technologies and included a continuous flow recycling process, which increased the throughput of modules able to be recycled at a point in time. Such process improvements also resulted in corresponding reductions in capital, chemical, labor, maintenance, and other general recycling costs, which further contributed to the reduction in the recycling rate per module and corresponding change in the liability.

Our module collection and recycling liability was $166.3 million and $163.4 million at December 31, 2016 and 2015, respectively. During the year ended December 31, 2016, we did not sell

any modules subject to our collection and recycling program but recognized accretion expense of $6.1 million associated with our module collection and recycling liability. During the year ended December 31, 2015, we recognized a benefit of $67.6 million to cost of sales and a benefit of $4.4 million to accretion expense primarily as a result of the reduction in our module collection and recycling liability described above, net of the incremental costs associated with module sales and accretion expense. During the year ended December 31, 2014, we recognized $30.7 million in cost of sales for the estimated costs of collection and recycling for modules sold during the period and also recognized accretion expense of $7.5 million associated with our module collection and recycling liability. As of December 31, 2016, a 1% increase in the annualized inflation rate used in our estimated future collection and recycling cost per module would increase our liability by $37.5 million, and a 1% decrease in that rate would decrease our liability by $31.0 million.

See Note 8 "Restricted Cash and Investments" to our consolidated financial statements for more information about our arrangements for funding this liability.

15. Debt

Our long-term debt consisted of the following at December 31, 2016 and 2015 (in thousands):

Loan Agreement	Maturity	Loan Denomination	Balance (USD) 2016	Balance (USD) 2015
Revolving credit facility	July 2018	USD	$ —	$ —
Project construction credit facilities	Various	Various	196,691	218,183
Malaysian ringgit facility agreement	September 2018	MYR	—	54,175
Malaysian euro facility agreement	April 2018	EUR	—	21,869
Malaysian facility agreement	March 2016	EUR	—	5,100
Capital lease obligations	Various	Various	562	1,065
Long-term debt principal			197,253	300,392
Less: unamortized discount and issuance costs			(8,865)	(10,977)
Total long-term debt			188,388	289,415
Less: current portion			(27,966)	(38,090)
Noncurrent portion			$160,422	$251,325

Revolving Credit Facility

Our amended and restated credit agreement with several financial institutions as lenders and JPMorgan Chase Bank, N.A. as administrative agent provides us with a senior secured credit facility (the "Revolving Credit Facility") with an aggregate available amount of $700.0 million, with the right to request an increase up to $900.0 million, subject to certain conditions. Borrowings under the Revolving Credit Facility bear interest at (i) LIBOR (adjusted for Eurocurrency reserve requirements) plus a margin of 2.25% or (ii) a base rate as defined in the credit agreement plus a margin of 1.25%, depending on the type of borrowing requested. These margins are subject to adjustment depending on our consolidated leverage ratio. We had no borrowings under our Revolving Credit Facility as of December 31, 2016 and 2015 and had issued $125.0 million and $191.6 million, respectively, of letters of credit using availability under the facility, leaving a total remaining availability of $575.0 million and $508.4 million, respectively. Loans and letters of credit issued under the Revolving Credit Facility are jointly and severally guaranteed by FSI; First Solar Electric, LLC ("FSE"); First Solar Electric

(California), Inc.; and First Solar Development, LLC and are secured by interests in substantially all of the guarantors' tangible and intangible assets other than certain excluded assets.

In January 2017, we entered into a sixth amendment to the Revolving Credit Facility. The amendment modified certain financial condition covenants to remove the requirement to maintain a minimum consolidated EBITDA and to increase the liquidity availability required to be maintained from $400.0 million to $800.0 million. Following this amendment, the remaining covenants of the credit agreement include a leverage ratio covenant and the minimum liquidity covenant noted above. Additionally, the credit agreement contains customary non-financial covenants and certain restrictions on our ability to pay dividends. We were in compliance with all covenants of the facility as of December 31, 2016.

In addition to paying interest on outstanding principal under the Revolving Credit Facility, we are required to pay a commitment fee at a rate of 0.375% per annum, based on the average daily unused commitments under the facility. The commitment fee may also be adjusted due to changes in our consolidated leverage ratio. We also pay a letter of credit fee based on the applicable margin for Eurocurrency revolving loans on the face amount of each letter of credit and a fronting fee of 0.125%.

Project Construction Credit Facilities

Chile

In August 2014, Parque Solar Fotovoltaico Luz del Norte SpA ("Luz del Norte"), our indirect wholly-owned subsidiary, entered into credit facilities with the Overseas Private Investment Corporation ("OPIC") and the International Finance Corporation ("IFC") to provide limited-recourse senior secured debt financing in an aggregate principal amount of up to $290.0 million for the design, development, financing, construction, testing, commissioning, operation, and maintenance of a 141 MW AC PV solar power plant located near Copiapó, Chile. In September 2015, Luz del Norte reduced the borrowing capacity on the credit facilities to $238.0 million.

Up to $178.0 million of the aggregate principal amount of the loans will be funded by OPIC. The OPIC commitment is comprised of fixed rate loans in an aggregate principal amount of up to $133.3 million and variable rate loans in an aggregate principal amount of up to $44.7 million. The fixed rate loans mature in September 2029, and the variable rate loans mature in September 2032. As of December 31, 2016 and 2015, the balance outstanding on the OPIC loans was $125.1 million.

Up to $60.0 million of the aggregate principal amount of the loans will be funded by IFC. The IFC commitment is comprised of fixed rate loans in an aggregate principal amount of up to $44.9 million and variable rate loans in an aggregate principal amount of up to $15.1 million. The fixed rate loans mature in September 2029, and the variable rate loans mature in September 2032. As of December 31, 2016 and 2015, the balance outstanding on the IFC loans was $42.2 million.

In August 2014, Luz del Norte also entered into a Chilean peso facility ("VAT facility" and together with the OPIC and IFC loans, the "Luz del Norte Credit Facilities") equivalent to $65.0 million with Banco de Crédito e Inversiones to fund Chilean value added tax associated with the construction of the Luz del Norte project described above. In February 2017, Luz de Norte extended the maturity date of the VAT facility until June 2017. First Solar, Inc. has provided a guaranty of substantially all payment obligations of Luz del Norte under the VAT facility. As of December 31, 2016 and 2015, the balance outstanding on the VAT facility was $13.7 million and $40.4 million, respectively.

The OPIC and IFC loans are secured by liens over all of Luz del Norte's assets, which had an aggregate book value of $357.7 million, including intercompany charges, as of December 31, 2016 and

by a pledge of the equity interests in the entity. The Luz del Norte Credit Facilities contain customary representations and warranties, covenants, and events of default for comparable credit facilities. We were in compliance with all covenants related to the Luz del Norte Credit Facilities as of December 31, 2016.

Japan

In December 2016, FS Japan Project 12 GK, our indirectly wholly-owned subsidiary, entered into a credit agreement with Mizuho Bank Ltd. for aggregate borrowings up to ¥27.3 billion ($233.9 million) for the development and construction of a 59 MW PV solar power plant located in Ishikawa, Japan (the "Ishikawa Credit Agreement"). The credit agreement is comprised of a ¥24.0 billion ($205.6 million) senior loan facility, a ¥2.1 billion ($18.0 million) consumption tax facility, and a ¥1.2 billion ($10.3 million) letter of credit facility. The credit agreement is secured by pledges of the projects' assets and by the equity interests in the entity. The credit agreement matures in October 2036 and contains customary representations and warranties, covenants, and events of default for comparable construction loan facilities in Japan. As of December 31, 2016, there was no balance outstanding under the Ishikawa Credit Agreement.

In September 2015, First Solar Japan GK, our wholly-owned subsidiary, entered into a construction loan facility with Mizuho Bank Ltd. for borrowings up to ¥4.0 billion ($34.3 million) for the development and construction of utility-scale PV solar power plants in Japan (the "Japan Credit Facility"). In September 2016, First Solar Japan GK renewed the facility for an additional one-year period until September 2017. The facility is guaranteed by FSI and secured by pledges of certain projects' cash accounts and other rights in the projects. As of December 31, 2016 and 2015, the balance outstanding on the facility was $9.5 million and $5.3 million, respectively. The facility contains customary representations and warranties, covenants, and events of default for comparable construction loan facilities in Japan. We were in compliance with all covenants related to the Japan Credit Facility as of December 31, 2016.

India

In March 2015, Marikal Solar Parks Private Limited and Mahabubnagar Solar Parks Private Limited, our indirect wholly-owned subsidiaries, entered into term loan facilities with Axis Bank, as administrative agent, for combined aggregate borrowings up to Rs1.1 billion ($16.2 million) for the development and construction of two 10 MW PV solar power plants located in Telangana, India. The term loan facilities have a combined letter of credit sub-limit of Rs0.8 billion ($11.8 million), which may also be used to support construction activities. As of December 31, 2016 and 2015, we had issued Rs0.8 billion ($11.2 million) and Rs0.8 billion ($11.3 million), respectively, of letters of credit under the facilities. The term loan facilities mature in December 2028 and are secured by certain assets of the borrowers, which had an aggregate book value of $90.3 million, including intercompany charges, as of December 31, 2016 and by a pledge of a portion of the equity interests in the borrowers. As of December 31, 2016 and 2015 the balance outstanding on the term loan facilities was $4.1 million and $5.2 million, respectively. The term loan facilities contain various financial covenants, including a leverage ratio covenant, a debt service ratio covenant, and a fixed asset coverage ratio covenant. We were in compliance with all covenants related to the term loan facilities as of December 31, 2016.

In March 2016, Polepally Solar Parks Private Limited, our indirect wholly-owned subsidiary, entered into a term loan facility (together with the Marikal and Mahabubnagar term loans, the "India Credit Facilities") with Axis Bank, as administrative agent, for borrowings up to Rs1.3 billion ($19.1 million) for costs related to a 25 MW PV solar power plant located in Telangana, India. The

term loan facility has a letter of credit sub-limit of Rs1.1 billion ($16.2 million), which may also be used for project related costs. As of December 31, 2016, we had issued Rs1.0 billion ($15.3 million) of letters of credit under the facility. The term loan facility matures in September 2029 and is secured by certain assets of the borrower, which had an aggregate book value of $33.3 million, including intercompany charges, as of December 31, 2016 and by a pledge of a portion of the equity interests in the borrower. The term loan facility is guaranteed by FSI until certain conditions are met, including the achievement of commercial operations by the plant and various other compliance and performance metrics. As of December 31, 2016, the balance outstanding on the term loan facility was $2.2 million. The term loan facility contains various covenants including a leverage ratio covenant, a debt service ratio covenant, and a fixed asset ratio covenant. We were in compliance with all covenants related to the term loan facility as of December 31, 2016.

In November 2016, Hindupur Solar Parks Private Limited, our indirect wholly-owned subsidiary, entered into a term loan facility ("Hindupur Credit Facility") with Yes Bank Limited for borrowings up to Rs4.3 billion ($63.3 million) for costs related to an 80 MW PV solar power plant located in Andhra Pradesh, India. The term loan facility has a letter of credit sub-limit of Rs3.2 billion ($47.1 million), which may also be used for project related costs. The Hindupur term loan facility matures in December 2030 and is secured by certain assets of the borrower, which had an aggregate book value of $90.5 million, including intercompany charges, as of December 31, 2016 and by a pledge of a portion of the equity interests in the borrower. In addition, the Hindupur term loan facility is guaranteed by FSI until certain conditions are met, including the achievement of commercial operations by the plant and various other compliance and performance metrics. As of December 31, 2016, there was no balance outstanding on the term loan facility. The Hindupur term loan facility contains various covenants including a leverage ratio covenant, a debt service ratio covenant, and a fixed asset ratio covenant.

Malaysian Ringgit Facility Agreement

FS Malaysia, our indirect wholly-owned subsidiary, entered into a credit facility agreement ("Malaysian Ringgit Facility Agreement"), among FSI as guarantor, CIMB Investment Bank Berhad, Maybank Investment Bank Berhad, and RHB Investment Bank Berhad as arrangers with CIMB Investment Bank Berhad also acting as facility agent and security agent, and the original lenders party thereto. The loans made to FS Malaysia were secured by, among other things, FS Malaysia's leases for the lots on which our fifth and sixth manufacturing plants in Kulim, Malaysia ("Plants 5 and 6") are located and all plant, machinery, and equipment purchased by FS Malaysia with the proceeds of the facility or otherwise installed in or utilized in Plants 5 and 6, to the extent not financed, or subject to a negative pledge under a separate financing facility related to Plants 5 and 6. In June 2016, we repaid the remaining $47.3 million principal balance on the Malaysian Ringgit Facility Agreement. There were no prepayment penalties associated with this early repayment.

Malaysian Euro Facility Agreement

FS Malaysia entered into a credit facility agreement ("Malaysian Euro Facility Agreement") with Commerzbank Aktiengesellschaft and Natixis Zweigniederlassung Deutschland as arrangers and original lenders, and Commerzbank Aktiengesellschaft, Luxembourg Branch as facility agent and security agent. In connection with the Malaysian Euro Facility Agreement, FSI concurrently entered into a first demand guarantee agreement in favor of the lenders. Under this agreement, FS Malaysia's obligations related to the credit facility were guaranteed, on an unsecured basis, by FSI. At the same time, FS Malaysia and FSI also entered into a subordination agreement, pursuant to which any payment claims of FSI against FS Malaysia were subordinated to the claims of the lenders. In April 2016, we repaid the remaining $22.7 million principal balance on the Malaysian Euro Facility Agreement. There were no prepayment penalties associated with this early repayment.

Variable Interest Rate Risk

Certain of our long-term debt agreements bear interest at prime, London Interbank Offered Rate ("LIBOR"), Tokyo Interbank Offered Rate ("TIBOR"), or equivalent variable rates. A disruption of the credit environment, as previously experienced, could negatively impact interbank lending and, therefore, negatively impact these floating rates. An increase in prime, LIBOR, TIBOR, or equivalent variable rates would increase the cost of borrowing under our Revolving Credit Facility and various project construction credit facilities.

Our long-term debt borrowing rates as of December 31, 2016 were as follows:

Loan Agreement	Borrowing Rate at December 31, 2016
Revolving Credit Facility	3.02%
Luz del Norte Credit Facilities	Fixed rate loans at bank rate plus 3.50% Variable rate loans at 91-Day U.S. Treasury Bill Yield or LIBOR plus 3.50% VAT loans at bank rate plus 1.30%
Japan Credit Facility	TIBOR plus 0.5%
Ishikawa Credit Agreement	Senior loan facility at 6-month TIBOR plus 0.75% Consumption tax facility at 3-month TIBOR plus 0.5%
India Credit Facilities	Bank rate plus 2.35%
Hindupur Credit Facility	Bank rate plus 1.0%
Capital lease obligations	Various

During the years ended December 31, 2016, 2015, and 2014, we paid $4.3 million, $15.2 million, and $7.6 million, respectively, of interest related to our long-term debt arrangements.

Future Principal Payments

At December 31, 2016, the future principal payments on our long-term debt, excluding payments related to capital leases, were due as follows (in thousands):

	Total Debt
2017	$ 27,958
2018	4,799
2019	5,775
2020	11,921
2021	11,149
Thereafter	135,089
Total long-term debt future principal payments	$196,691

16. Commitments and Contingencies

Commercial Commitments

During the normal course of business, we enter into commercial commitments in the form of letters of credit, bank guarantees, and surety bonds to provide financial and performance assurance to third parties. Our Revolving Credit Facility provides us with a sub-limit of $500.0 million to issue letters of credit, subject to certain additional limits depending on the currencies of the letters of credit, at a

fee based on the applicable margin for Eurocurrency revolving loans and a fronting fee. As of December 31, 2016, we had $125.0 million in letters of credit issued under our Revolving Credit Facility, leaving $375.0 million of availability for the issuance of letters of credit after adjusting for borrowings on the facility. The majority of these letters of credit were supporting our systems business projects. As of December 31, 2016, we also had $7.3 million of bank guarantees and letters of credit under separate agreements that were posted by certain of our foreign subsidiaries, $220.2 million of letters of credit issued under three bilateral facilities, of which $28.6 million was secured with cash, and $128.9 million of surety bonds outstanding primarily for our systems business projects. The available bonding capacity under our surety lines was $654.6 million as of December 31, 2016.

Lease Commitments

We lease our corporate headquarters, administrative offices, research and development facilities, and warehouse space in the United States and international locations under noncancelable operating leases. We also hold various land leases for the development and construction of PV solar power systems and, in international locations, for certain of our manufacturing facilities. These leases may require us to pay property taxes, common area maintenance, and certain other costs in addition to base rent. We also lease certain machinery and equipment under operating and capital leases. Future minimum payments under all of our noncancelable leases were as follows as of December 31, 2016 (in thousands):

	2017	2018	2019	2020	2021	Thereafter	Total Minimum Lease Payments	Less Amounts Representing Interest	Present Value of Minimum Lease Payments	Less Current Portion of Capital Leases	Noncurrent Portion of Capital Leases
Gross operating lease obligations	$18,296	$15,233	$12,278	$7,547	$6,702	$134,835	$194,891				
Sublease income	(1,449)	(906)	—	—	—	—	(2,355)				
Net operating lease obligations	16,847	14,327	12,278	7,547	6,702	134,835	192,536				
Capital leases	420	97	65	—	—	—	582	(20)	562	(355)	207
Total	$17,267	$14,424	$12,343	$7,547	$6,702	$134,835	$193,118				

Our rent expense was $24.5 million, $22.5 million, and $18.0 million for the years ended December 31, 2016, 2015, and 2014, respectively.

Purchase Commitments

We purchase raw materials for inventory, manufacturing equipment, construction materials, and various services from a variety of vendors. During the normal course of business, in order to manage manufacturing and construction lead times and help assure an adequate supply of certain items, we enter into agreements with suppliers that either allow us to procure goods and services when we choose or that establish purchase requirements over the term of the agreement. In certain instances, the agreements with purchase requirements allow us the option to cancel, reschedule, or adjust our requirements based on our business needs prior to firm orders being placed. Consequently, only a portion of our purchase commitments are firm, noncancelable, enforceable, and legally binding. At December 31, 2016, our obligations under such arrangements were $525.0 million, of which $135.1 million was for commitments related to capital expenditures. $464.3 million of our purchase obligations are due in 2017.

Product Warranties

When we recognize revenue for module or systems sales, we accrue liabilities for the estimated future costs of meeting our limited warranty obligations for both modules and the balance of the systems. We make and revise these estimates based primarily on the number of our solar modules under warranty installed at customer locations, our historical experience with warranty claims, our monitoring of field installation sites, our internal testing of and the expected future performance of our solar modules and BoS components, and our estimated replacement costs. From time to time, we have taken remediation actions with respect to affected modules beyond our limited warranties, and we may elect to do so in the future, in which case we would incur additional expenses. Such potential voluntary future remediation actions beyond our limited warranty obligations could be material to our consolidated statements of operations if we commit to any such remediation actions.

Product warranty activities during the years ended December 31, 2016, 2015, and 2014 were as follows (in thousands):

	2016	2015	2014
Product warranty liability, beginning of period	$231,751	$223,057	$198,041
Accruals for new warranties issued	35,256	50,040	40,599
Settlements	(16,266)	(13,392)	(16,721)
Changes in estimate of product warranty liability	1,667	(27,954)	1,138
Product warranty liability, end of period	$252,408	$231,751	$223,057
Current portion of warranty liability	$ 40,079	$ 38,468	$ 69,656
Noncurrent portion of warranty liability	$212,329	$193,283	$153,401

We estimate our limited product warranty liability for power output and defects in materials and workmanship under normal use and service conditions based on a warranty return rate of approximately 1% to 3% for modules covered under warranty. As of December 31, 2016, a 1% change in the estimated warranty return rate would change our module warranty liability by $83.5 million, and a 1% change in the estimated warranty return rate for BoS components would not have a material impact on the associated warranty liability.

Performance Guarantees

As part of our systems business, we conduct performance testing of a system prior to substantial completion to confirm the system meets its operational and capacity expectations noted in the EPC agreement. In addition, we may provide an energy performance test during the first or second year of a system's operation to demonstrate that the actual energy generation for the applicable year meets or exceeds the modeled energy expectation, after certain adjustments. If there is an underperformance event with regards to these tests, we may incur liquidated damages as a percentage of the EPC contract price. In certain instances, a bonus payment may be received at the end of the first year if the system performs above a specified level. As of December 31, 2016 and 2015, we accrued $6.3 million and $0.3 million, respectively, of estimated obligations under such arrangements, which were classified as "Other current liabilities" in the consolidated balance sheets.

As part of our O&M service offerings, we typically offer an effective availability guarantee, which stipulates that a system will be available to generate a certain percentage of total possible energy during a specific period after adjusting for factors outside of our control as the service provider, such as weather, curtailment, outages, force majeure, and other conditions that may affect system

availability. Effective availability guarantees are only offered as part of our O&M services and terminate at the end of an O&M arrangement. If we fail to meet the contractual threshold for these guarantees, we may incur liquidated damages for certain lost energy under the PPA. Our O&M agreements typically contain provisions limiting our total potential losses under an agreement, including amounts paid for liquidated damages, to a percentage of O&M fees. Many of our O&M agreements also contain provisions whereby we may receive a bonus payment if system availability exceeds a separate threshold. As of December 31, 2016 and 2015, we did not accrue any estimated obligations under our effective availability guarantees.

Indemnifications

In certain limited circumstances, we have provided indemnifications to customers or project tax equity investors under which we are contractually obligated to compensate such parties for losses they may suffer as a result of reductions in tax benefits received, including investment tax credits. Project related tax benefits are, in part, based on guidance provided by the Internal Revenue Service and U.S. Treasury Department, which includes assumptions regarding the fair value of qualifying PV solar power systems. For any sales agreements that have such indemnification provisions, we reduce the profit recognized, if any, by the maximum exposure to loss until the indemnification provisions are of no further force or effect and all other necessary revenue recognition criteria have been met.

Contingent Consideration

As part of our Enki acquisition, we agreed to pay additional consideration of up to $7.0 million to the selling shareholders contingent upon the achievement of certain production and module performance milestones. See Note 5 "Business Acquisitions" to our consolidated financial statements for further discussion of this acquisition. In connection with our previously disclosed TetraSun acquisition, we agreed to pay additional amounts to the sellers contingent upon achievement by the acquired business of certain negotiated goals, such as targeted module shipment volumes. In June 2016, we reversed the outstanding contingent consideration associated with our TetraSun acquisition of $7.4 million as a result of our executive management's decision to end production of our crystalline silicon modules, which adversely affected the likelihood of achieving certain module shipment volume milestones. Such reversal resulted in a corresponding gain recorded within "Other income (expense), net" on our consolidated statements of operations for the year ended December 31, 2016. See Note 4 "Restructuring and Asset Impairments" to our consolidated financial statements for further discussion related to these restructuring activities. As of December 31, 2016, we had recorded $7.0 million of long-term liabilities for contingent obligations based on their estimated fair values. As of December 31, 2015, we had recorded $2.5 million of current liabilities and $4.9 million of long-term liabilities for such contingent obligations based on their estimated fair values.

We continually seek to make additions to our advanced-stage project pipeline and are also actively developing our early to mid-stage project pipeline in order to secure PPAs and are also pursuing opportunities to acquire advanced-stage projects, which already have PPAs in place. In connection with such project acquisitions, we may agree to pay additional amounts to project sellers upon achievement of certain project-related milestones, such as obtaining a PPA, obtaining financing, and selling the project to a new owner. We recognize an estimated project acquisition contingent liability when we determine that such liability is both probable and reasonably estimable, and the carrying amount of the related project asset is correspondingly increased. As of December 31, 2016 and 2015, we recorded $19.6 million and $6.7 million of current liabilities, respectively, and $3.5 million and $3.9 million of long-term liabilities, respectively, for such contingent obligations. Any future differences between the acquisition-date contingent obligation estimate and the ultimate settlement of the obligations will be recognized primarily as an adjustment to project assets, as contingent payments are considered direct and incremental to the underlying value of the related projects.

Legal Proceedings

We are party to legal matters and claims in the normal course of our operations. While we believe that the ultimate outcome of these matters will not have a material adverse effect on our financial position, results of operations, or cash flows, the outcome of these matters is not determinable with certainty, and negative outcomes may adversely affect us.

Class Action

On March 15, 2012, a purported class action lawsuit titled Smilovits v. First Solar, Inc., et al., Case No. 2:12-cv-00555-DGC, was filed in the United States District Court for the District of Arizona (hereafter "Arizona District Court") against the Company and certain of our current and former directors and officers. The complaint was filed on behalf of persons who purchased or otherwise acquired the Company's publicly traded securities between April 30, 2008 and February 28, 2012 (the "Class Action"). The complaint generally alleges that the defendants violated Sections 10(b) and 20(a) of the Securities Exchange Act of 1934 by making false and misleading statements regarding the Company's financial performance and prospects. The action includes claims for damages, including interest, and an award of reasonable costs and attorneys' fees to the putative class. The Company believes it has meritorious defenses and will vigorously defend this action.

On July 23, 2012, the Arizona District Court issued an order appointing as lead plaintiffs in the Class Action the Mineworkers' Pension Scheme and British Coal Staff Superannuation Scheme (collectively "Pension Schemes"). The Pension Schemes filed an amended complaint on August 17, 2012, which contains similar allegations and seeks similar relief as the original complaint. Defendants filed a motion to dismiss on September 14, 2012. On December 17, 2012, the court denied defendants' motion to dismiss. On October 8, 2013, the Arizona District Court granted the Pension Schemes' motion for class certification, and certified a class comprised of all persons who purchased or otherwise acquired publicly traded securities of the Company between April 30, 2008 and February 28, 2012 and were damaged thereby, excluding defendants and certain related parties. Merits discovery closed on February 27, 2015.

Defendants filed a motion for summary judgment on March 27, 2015. On August 11, 2015, the Arizona District Court granted defendants' motion in part and denied it in part, and certified an issue for immediate appeal to the Ninth Circuit Court of Appeals (the "Ninth Circuit"). First Solar filed a petition for interlocutory appeal with the Ninth Circuit, and that petition was granted on November 18, 2015. On May 20, 2016, the Pension Schemes moved to vacate the order granting the petition, dismiss the appeal, and stay the merits briefing schedule. On December 13, 2016, the Ninth Circuit denied the Pension Schemes' motion. Merits briefing on the appeal is ongoing. The Arizona District Court has entered a stay of the proceedings in district court until the appeal is decided. Given the pending appeal, the need for further expert discovery, and the uncertainties of trial, we are not in a position to assess whether any loss or adverse effect on our financial condition is probable or remote or to estimate the range of potential loss, if any.

Opt-Out Action

On June 23, 2015, a suit titled Maverick Fund, L.D.C. v. First Solar, Inc., et al., Case No. 2:15-cv-01156-ROS, was filed in Arizona District Court by putative stockholders that opted out of the Class Action. The complaint names the Company and certain of our current and former directors and officers as defendants, and alleges that the defendants violated Sections 10(b) and 20(a) of the Securities Exchange Act of 1934, and violated state law, by making false and misleading statements

regarding the Company's financial performance and prospects. The action includes claims for recessionary and actual damages, interest, punitive damages, and an award of reasonable attorneys' fees, expert fees, and costs. The Company believes it has meritorious defenses and will vigorously defend this action.

The Arizona District Court has extended the deadline for responding to the complaint until after the Ninth Circuit resolves the appeal in the Smilovits matter described above. Accordingly, we are not in a position to assess whether any loss or adverse effect on our financial condition is probable or remote or to estimate the range of potential loss, if any.

Derivative Actions

On April 3, 2012, a derivative action titled Tsevegmid v. Ahearn, et al., Case No. 1:12-cv-00417-CJB, was filed by a putative stockholder on behalf of the Company in the United States District Court for the District of Delaware (hereafter "Delaware District Court") against certain current and former directors and officers of the Company, alleging breach of fiduciary duties and unjust enrichment. The complaint generally alleges that from June 1, 2008, to March 7, 2012, the defendants caused or allowed false and misleading statements to be made concerning the Company's financial performance and prospects. The action includes claims for, among other things, damages in favor of the Company, certain corporate actions to purportedly improve the Company's corporate governance, and an award of costs and expenses to the putative plaintiff stockholder, including attorneys' fees. On April 10, 2012, a second derivative complaint was filed in the Delaware District Court. The complaint, titled Brownlee v. Ahearn, et al., Case No. 1:12-cv-00456-CJB, contains similar allegations and seeks similar relief to the Tsevegmid action. By court order on April 30, 2012, pursuant to the parties' stipulation, the Tsevegmid action and the Brownlee action were consolidated into a single action in the Delaware District Court. On May 15, 2012, defendants filed a motion to challenge Delaware as the appropriate venue for the consolidated action. On March 4, 2013, the magistrate judge issued a Report and Recommendation recommending to the court that defendants' motion be granted and that the case be transferred to the Arizona District Court. On July 12, 2013, the court adopted the magistrate judge's Report and Recommendation and ordered the case transferred to the Arizona District Court. The transfer was completed on July 15, 2013.

On April 12, 2012, a derivative complaint was filed in the Arizona District Court, titled Tindall v. Ahearn, et al., Case No. 2:12-cv-00769-ROS. In addition to alleging claims and seeking relief similar to the claims and relief asserted in the Tsevegmid and Brownlee actions, the Tindall complaint alleges violations of Sections 14(a) and 20(b) of the Securities Exchange Act of 1934. On April 19, 2012, a second derivative complaint was filed in the Arizona District Court, titled Nederhood v. Ahearn, et al., Case No. 2:12-cv-00819-JWS. The Nederhood complaint contains similar allegations and seeks similar relief to the Tsevegmid and Brownlee actions. On May 17, 2012 and May 30, 2012, respectively, two additional derivative complaints, containing similar allegations and seeking similar relief as the Nederhood complaint, were filed in Arizona District Court: Morris v. Ahearn, et al., Case No. 2:12-cv-01031-JAT and Tan v. Ahearn, et al., 2:12-cv-01144-NVW.

On July 17, 2012, the Arizona District Court issued an order granting First Solar's motion to transfer the derivative actions to Judge David Campbell, the judge to whom the Smilovits class action is assigned. On August 8, 2012, the court consolidated the four derivative actions pending in Arizona District Court, and on August 31, 2012, plaintiffs filed an amended complaint. Defendants filed a motion to stay the action on September 14, 2012. On December 17, 2012, the Arizona District Court granted defendants' motion to stay pending resolution of the Smilovits class action. On August 13, 2013, Judge Campbell consolidated the two derivative actions transferred from the Delaware District

Court with the stayed Arizona derivative actions. On February 19, 2016, the Arizona District Court issued an order lifting the stay in part. Pursuant to the February 19, 2016 order, the plaintiffs filed an amended complaint on March 11, 2016, and defendants filed a motion to dismiss the amended complaint on April 1, 2016. On June 30, 2016, the Arizona District Court granted defendants' motion to dismiss the insider trading and unjust enrichment claims with prejudice, and further granted defendants' motion to dismiss the claims for alleged breaches of fiduciary duties with leave to amend. On July 15, 2016, plaintiffs filed a motion to reconsider certain aspects of the order granting defendants' motion to dismiss. The Arizona District Court denied the plaintiffs' motion for reconsideration on August 4, 2016. On July 15, 2016, plaintiffs filed a motion to intervene, lift the stay, and unseal documents in the securities Class Action. On September 30, 2016, the Arizona District Court denied plaintiffs' motion. On October 17, 2016, plaintiffs filed a notice of appeal to the Ninth Circuit of the September 30, 2016 order. On October 27, 2016, plaintiffs filed a motion to extend the October 31, 2016 deadline to file an amended complaint. On November 29, 2016, the Arizona District Court denied plaintiffs' request and directed the clerk to terminate the action. On January 23, 2017, the Arizona District Court entered judgment in favor of Defendants and terminated the action. On January 27, 2017, plaintiffs filed a notice of appeal to the Ninth Circuit. Plaintiffs' opening brief on their appeal of the order denying intervention is due on March 1, 2017. Plaintiffs' opening brief on their appeal of the judgment dismissing the action is due on May 8, 2017.

On July 16, 2013, a derivative complaint was filed in the Superior Court of Arizona, Maricopa County, titled Bargar, et al. v. Ahearn, et al., Case No. CV2013-009938, by a putative stockholder against certain current and former directors and officers of the Company. The complaint contains similar allegations to the Delaware and Arizona derivative cases, and includes claims for, among other things, breach of fiduciary duties, insider trading, unjust enrichment, and waste of corporate assets. By court order on October 3, 2013, the Superior Court of Arizona, Maricopa County granted the parties' stipulation to defer defendants' response to the complaint pending resolution of the Smilovits class action or expiration of the stay issued in the consolidated derivative actions in the Arizona District Court. On November 5, 2013, the matter was placed on the court's inactive calendar. The parties have jointly sought and obtained multiple requests to continue the stay in this action. Most recently, on October 31, 2016, the court entered an order continuing the stay until March 31, 2017.

The Company believes that plaintiffs in the derivative actions lack standing to pursue litigation on behalf of First Solar. The derivative actions are still in the initial stages and there has been no discovery. Accordingly, we are not in a position to assess whether any loss or adverse effect on our financial condition is probable or remote or to estimate the range of potential loss, if any.

Department of Labor Proceeding

In March 2015, the Wage and Hour Division of the U.S. Department of Labor (the "DOL") notified our wholly-owned subsidiary FSE of the DOL's findings following a labor standards compliance review under the Davis Bacon and Related Acts at the Agua Caliente project in southwestern Arizona. FSE served as the general contractor for the project. The DOL alleges that certain workers at the project were misclassified and, as a result of that misclassification, were not paid the required prevailing wage. We disagree with certain of the DOL's investigative findings and are currently reviewing those issues of disagreement with the DOL. Possible adverse outcomes include the payment of back wages to certain project workers. We do not expect the outcome of the DOL proceeding to have a material adverse effect on our business, financial condition, or results of operations.

17. Stockholders' Equity

Preferred Stock

We have authorized 30,000,000 shares of undesignated preferred stock, $0.001 par value, none of which was issued and outstanding at December 31, 2016 and 2015. Our board of directors is authorized to determine the rights, preferences, and restrictions on any series of preferred stock that we may issue.

Common Stock

We have authorized 500,000,000 shares of common stock, $0.001 par value, of which 104,034,731 and 101,766,797 shares were issued and outstanding at December 31, 2016 and 2015, respectively. Each share of common stock is entitled to a single vote. We have not declared or paid any dividends through December 31, 2016.

18. Share-Based Compensation

We measure share-based compensation cost at the grant date based on the fair value of the award and recognize this cost as share-based compensation expense over the required or estimated service period for awards that vest. The share-based compensation expense that we recognized in our consolidated statements of operations for the years ended December 31, 2016, 2015, and 2014 was as follows (in thousands):

	2016	2015	2014
Cost of sales	$ 7,598	$10,713	$11,713
Research and development	3,284	4,109	4,417
Selling, general and administrative	17,830	30,052	27,660
Production start-up	—	25	20
Total share-based compensation expense	$28,712	$44,899	$43,810

The following table presents our share-based compensation expense by type of award for the years ended December 31, 2016, 2015, and 2014 (in thousands):

	2016	2015	2014
Restricted and performance stock units	$25,076	$40,393	$42,852
Unrestricted stock	1,677	1,326	1,326
Stock purchase plan	1,332	1,254	1,003
	28,085	42,973	45,181
Net amount released from (absorbed into) inventory	627	1,926	(1,371)
Total share-based compensation expense	$28,712	$44,899	$43,810

Share-based compensation expense capitalized in inventory was $2.7 million and $3.4 million as of December 31, 2016 and 2015, respectively. As of December 31, 2016, we had $23.5 million of unrecognized share-based compensation expense related to unvested restricted stock units and rights under our stock purchase plan (the "Stock Purchase Plan"), which we expect to recognize as expense over a weighted-average period of approximately 1.2 years.

As a result of the adoption of ASU 2016-09, we have elected to account for forfeitures of share-based awards as such forfeitures occur. Prior to the adoption of this guidance, the estimated forfeiture rate used to record share-based compensation expense was primarily based on historical forfeitures and adjusted periodically based on actual results. Accordingly, at December 31, 2016 and 2015, our forfeiture rate was zero and 9.5%, respectively. See Note 3 "Recent Accounting Pronouncements" to our consolidated financial statements for additional information on the adoption of ASU 2016-09.

During the years ended December 31, 2016, 2015, and 2014, we recognized an income tax benefit in our statement of operations of $9.6 million, $15.3 million, and $15.8 million, respectively, related to share-based compensation expense.

We authorize our transfer agent to issue new shares, net of shares withheld for minimum statutory withholding taxes as appropriate, for the vesting of restricted and performance stock units or grants of unrestricted stock.

Share-Based Compensation Plans

During 2015, we adopted our 2015 Omnibus Incentive Compensation Plan ("the 2015 Omnibus Plan"), under which directors, officers, employees, and consultants of First Solar (including any of its subsidiaries) are eligible to participate in various forms of share-based compensation. The 2015 Omnibus Plan is administered by the compensation committee of our board of directors (or any other committee designated by our board of directors), which is authorized to, among other things, determine who will receive grants and determine the exercise price and vesting schedule of the awards made under the 2015 Omnibus Plan. Our board of directors may amend, modify, or terminate the 2015 Omnibus Plan without the approval of our stockholders, except stockholder approval is required for amendments that would increase the maximum number of shares of our common stock available for awards under the 2015 Omnibus Plan, increase the maximum number of shares of our common stock that may be delivered by incentive stock options, or modify the requirements for participation in the 2015 Omnibus Plan.

The 2015 Omnibus Plan provides for the grant of incentive stock options, non-qualified stock options, stock appreciation rights, restricted shares, restricted stock units, performance units, cash incentive awards, performance compensation awards, and other equity-based and equity-related awards. In addition, the shares underlying any forfeited, expired, terminated, or canceled awards, or shares surrendered as payment for taxes required to be withheld, become available for new award grants. We may not grant awards under the 2015 Omnibus Plan after 2025, which is the tenth anniversary of the 2015 Omnibus Plan's approval by our stockholders. As of December 31, 2016, 5,144,522 shares were reserved for future issuance under the 2015 Omnibus Plan.

Restricted Stock Units and Performance Based Restricted Stock Units

We issue shares to the holders of restricted stock units on the date the restricted units vest. The majority of shares issued are net of the minimum statutory withholding requirements, which we pay on behalf of our associates. As a result, the actual number of shares issued will be less than the number of restricted stock units granted. Prior to vesting, restricted stock units do not have dividend equivalent rights or voting rights, and the shares underlying the restricted stock units are not considered issued and outstanding.

Some of our restricted stock units have been characterized as performance based restricted stock units. Our board of directors previously approved and adopted the Key Senior Talent Equity Performance Program ("KSTEPP"), a performance unit program under our prior 2010 Omnibus

Incentive Compensation Plan applicable to our senior executives. The KSTEPP rewarded achievement of certain performance objectives aligned to the success of our long term strategic plan. Such performance objectives included KSTEPP adjusted operating income, sales in key geographic markets, and cash adjusted return on invested capital. The KSTEPP awards were designed so that the attainment of the performance criteria required for full or partial vesting would be attained over time. In July 2016, the compensation committee of our board of directors certified the Company's achievement of the full KSTEPP vesting conditions for the rolling annual period ended June 30, 2016. Accordingly, the remaining two-thirds of each KSTEPP award vested in 2016, and each KSTEPP participant received one share of common stock for each vested KSTEPP performance unit, net of any forfeitures.

The following is a summary of our restricted stock unit activity, including performance stock unit activity, for the year ended December 31, 2016:

	Number of Shares	Weighted Average Grant-Date Fair Value
Unvested restricted stock units at December 31, 2015	2,973,975	$31.58
Restricted stock units granted	605,005	59.64
Restricted stock units vested	(2,361,426)	26.96
Restricted stock units forfeited	(261,434)	57.85
Unvested restricted stock units at December 31, 2016	956,120	$53.55

We estimate the fair value of our restricted stock unit awards based on our stock price at the grant date. For the years ended December 31, 2015 and 2014, the weighted average grant-date fair value for restricted stock units granted in such years was $60.91 and $57.74, respectively. The total fair value of restricted stock units vested during 2016, 2015, and 2014 was $131.0 million, $96.4 million, and $66.8 million, respectively.

Stock Awards

During the years ended December 31, 2016, 2015, and 2014, we awarded 38,429, 25,376, and 21,879, respectively, of fully vested, unrestricted shares of our common stock to the independent members of our board of directors. Accordingly, we recognized $1.7 million, $1.3 million, and $1.3 million of share-based compensation expense for these awards during the years ended December 31, 2016, 2015, and 2014, respectively.

Stock Purchase Plan

Our shareholders approved our stock purchase plan for employees in June 2010. The plan allows employees to purchase our common stock through payroll withholdings over a six-month offering period at 85% of the closing share price on the last day of the offering period (the "exercise date"). We estimate the fair value of our stock purchase plan compensation expense based primarily on our stock price on the exercise date.

19. Benefit Plans

We offer a 401(k) retirement savings plan into which all of our U.S. associates (our term for employees) can voluntarily contribute a portion of their annual salaries or wages, subject to legally prescribed dollar limits. Our contributions to the plan are made at the discretion of our board of directors and are based on a percentage of the participating associates' contributions. We match associate contributions on a dollar-for-dollar basis up to the first 4% of their annual salaries or wages. Our contributions to the plan were $8.2 million, $7.4 million, and $6.5 million for the years ended December 31, 2016, 2015, and 2014, respectively. Our 401(k) retirement savings plan does not offer participants an option to invest in our common stock.

We also offer retirement savings plans to certain non-U.S. associates. These plans are managed in accordance with applicable local statutes and practices and are defined contribution plans. Our contributions to these plans were $0.9 million for the years ended December 31, 2016, 2015, and 2014, respectively.

20. Income Taxes

The U.S. and non-U.S. components of our loss or income before income taxes for the years ended December 31, 2016, 2015, and 2014 were as follows (in thousands):

	2016	2015	2014
U.S. income	$(361,231)	$126,958	$139,137
Non-U.S. income	(110,459)	392,877	292,964
(Loss) income before taxes and equity in earnings of unconsolidated affiliates	$(471,690)	$519,835	$432,101

The components of our income tax expense or benefit for the years ended December 31, 2016, 2015, and 2014 were as follows (in thousands):

	2016	2015	2014
Current (benefit) expense:			
Federal	$ (7,689)	$ 20,208	$15,492
State	1,877	4,172	1,699
Foreign	(29,009)	23,215	8,123
Total current (benefit) expense	(34,821)	47,595	25,314
Deferred expense (benefit):			
Federal	115,905	(716)	2,926
State	(7,343)	3,118	5,133
Foreign	(15,522)	(56,153)	(2,185)
Total deferred expense (benefit)	93,040	(53,751)	5,874
Total income tax expense (benefit)	$ 58,219	$ (6,156)	$31,188

The current tax expense listed above does not reflect income tax benefits of $14.6 million and $24.5 million for the years ended December 31, 2015 and 2014, respectively, related to excess tax deductions on share-based compensation as we recorded such benefits directly to additional paid-in capital. Following the adoption of ASU 2016-09, we recorded excess tax deductions on share-based

compensation in income tax expense for the year ended December 31, 2016. See Note 3 "Recent Accounting Pronouncements" to our consolidated financial statements for additional information on the adoption of ASU 2016-09.

We use the deferral method of accounting for investment tax credits under which the credits are recognized as reductions in the carrying value of the related assets. The use of the deferral method also results in a basis difference from the recognition of a deferred tax asset and an immediate income tax benefit for the future tax depreciation of the related assets. Such basis differences are accounted for pursuant to the income statement method. During 2015, we generated a $19.2 million investment tax credit from placing a project in service.

Our Malaysian subsidiary has been granted a long-term tax holiday that expires in 2027. The tax holiday, which generally provides for a full exemption from Malaysian income tax, is conditional upon our continued compliance with meeting certain employment and investment thresholds, which we are currently in compliance with and expect to continue to comply with through the expiration of the tax holiday in 2027.

Income tax expense increased by $64.4 million during 2016 compared to 2015, primarily due to certain U.S. taxes on a cash distribution received from a foreign subsidiary, partially offset by tax benefits from restructuring charges and a $35.4 million reversal of an uncertain tax position related to the income of a foreign subsidiary. Income tax expense decreased by $37.3 million during 2015 compared to 2014, primarily as a result of a $41.7 million discrete tax benefit associated with the receipt of a private letter ruling.

Our income tax results differed from the amount computed by applying the U.S. statutory federal income tax rate of 35.0% to our income or loss before income taxes for the following reasons for the years ended December 31, 2016, 2015, and 2014 (in thousands):

	2016		2015		2014	
	Tax	Percent	Tax	Percent	Tax	Percent
Statutory income tax (benefit) expense	$(165,091)	35.0%	$ 181,936	35.0%	$151,235	35.0%
Foreign dividend income	248,013	(52.6)%	—	—%	—	—%
Change in tax contingency	(34,541)	7.3%	—	—%	—	—%
Goodwill	22,468	(4.8)%	—	—%	—	—%
Share-based compensation	(23,283)	5.0%	—	—%	—	—%
Return to provision adjustments	11,757	(2.5)%	6,596	1.3%	(3,163)	(0.7)%
Non-deductible expenses	324	(0.1)%	4,161	0.8%	3,001	0.7%
State tax, net of federal tax	(5,065)	1.1%	5,437	1.0%	4,549	1.0%
Effect of tax holiday	4,640	(1.0)%	(126,324)	(24.3)%	(80,049)	(18.5)%
Foreign tax rate differential	6,833	(1.4)%	(9,637)	(1.9)%	(7,524)	(1.7)%
Effect of private letter ruling	—	—%	(41,694)	(8.0)%	—	—%
Tax credits	(15,435)	3.3%	(2,566)	(0.5)%	(3,014)	(0.7)%
Other	5,187	(1.1)%	(16,266)	(3.1)%	(2,206)	(0.5)%
Impact of changes in valuation allowance	2,412	(0.5)%	(7,799)	(1.5)%	(31,641)	(7.4)%
Reported income tax expense (benefit)	$ 58,219	(12.3)%	$ (6,156)	(1.2)%	$ 31,188	7.2%

For the year ended December 31, 2016, the tax expense from the foreign tax rate differential primarily related to our loss generated in Malaysia calculated at a statutory tax rate of 24.0%, compared to the U.S. statutory tax rate of 35.0%. For the years ended December 31, 2015 and 2014,

the tax benefit from the foreign tax rate differential primarily related to our income generated in Malaysia calculated at a statutory tax rate of 25.0%, compared to the U.S. statutory tax rate of 35.0%.

During the years ended December 31, 2016, 2015 and 2014, we made net tax payments of $1.9 million, $30.8 million and $17.0 million, respectively.

Deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities calculated for U.S. GAAP financial reporting purposes and the amounts calculated for preparing our income tax returns in accordance with tax regulations. The items that gave rise to our deferred taxes as of December 31, 2016 and 2015 were as follows (in thousands):

	2016	2015
Deferred tax assets:		
Goodwill	$ 42,168	$ 32,022
Compensation	18,289	38,938
Accrued expenses	83,349	74,432
Tax credits	62,254	211,066
Net operating losses	86,328	95,562
Inventory	6,830	5,961
Deferred expenses	3,276	8,559
Property, plant and equipment	64,150	38,869
Long-term contracts	48,364	2,522
Other	10,034	8,622
Deferred tax assets, gross	425,042	516,553
Valuation allowance	(123,936)	(121,524)
Deferred tax assets, net of valuation allowance	301,106	395,029
Deferred tax liabilities:		
Capitalized interest	(6,821)	(4,270)
Acquisition accounting / basis difference	(6,848)	(3,527)
Restricted investments and derivatives	(12,429)	(14,128)
Investments in foreign subsidiaries	(582)	(379)
Equity in earnings	(38,650)	(21,895)
Other	(322)	(2,388)
Deferred tax liabilities	(65,652)	(46,587)
Net deferred tax assets and liabilities	$ 235,454	$ 348,442

In July 2016, we received a letter from a foreign tax authority confirming our residency status in that jurisdiction. In accordance with the letter, we reversed a liability associated with an uncertain tax position related to the income of a foreign subsidiary. Accordingly, we recorded a benefit of $35.4 million through the tax provision from the reversal of such liability.

In April 2015, we received a private letter ruling in a foreign jurisdiction related to the timing of the deduction for certain of our obligations. In accordance with the private letter ruling, we will begin treating these obligations as deductible when we actually make payments on the obligations, which are expected to occur subsequent to the expiration of the tax holiday. Accordingly, we recorded a benefit of $41.7 million through the tax provision to establish a deferred tax asset associated with the future deductibility of these obligations.

During the years ended December 31, 2016 and 2015, FS Malaysia prepaid $59.0 million and $96.6 million, respectively, for intellectual property royalties to FSI. As a result of such transactions, FS Malaysia and FSI expect to recognize certain remaining amounts for royalty expense and royalty revenue, respectively, in 2017.

Changes in the valuation allowance against our deferred tax assets were as follows during the years ended December 31, 2016, 2015, and 2014 (in thousands):

	2016	2015	2014
Valuation allowance, beginning of year	$121,524	$129,323	$160,965
Additions	13,933	368	2,068
Reversals	(11,521)	(8,167)	(33,710)
Valuation allowance, end of year	$123,936	$121,524	$129,323

We maintained a valuation allowance of $123.9 million and $121.5 million as of December 31, 2016 and 2015, respectively, against certain of our deferred tax assets, as it is more likely than not that such amounts will not be fully realized. In 2016, the valuation allowance increased by $2.4 million primarily due to (i) current year operating losses in certain jurisdictions and (ii) an increase in deferred tax assets with a full valuation allowance due to a change in foreign exchange rates. These increases were partially offset by the partial release of valuation allowances in jurisdictions with current year operating income.

Except as required under U.S. tax law, we do not provide for U.S. or non-U.S. taxes on the cumulative undistributed earnings of our foreign subsidiaries that have not been previously taxed since we intend to invest such undistributed earnings indefinitely or repatriation of such earnings would not give rise to additional U.S. or non-U.S. taxes. If our intent changes or if these funds are needed for our U.S. or non-U.S. operations, we would be required to accrue or pay U.S. or non-U.S. taxes on some or all of these undistributed earnings. Accordingly, we have not provided for $0.9 billion of deferred income taxes on $2.4 billion of undistributed earnings of our foreign subsidiaries. These taxes would be required to be recognized when and if we determine that these amounts are not indefinitely reinvested.

At December 31, 2016, we had federal and aggregate state net operating loss carryforwards of $5.8 million and $12.1 million, respectively. At December 31, 2015, we had federal and aggregate state net operating loss carryforwards of $129.5 million and $23.8 million, respectively. If not used, the federal net operating loss carryforwards will begin to expire in 2031, and the state net operating loss carryforwards will begin to expire in 2028. The utilization of a portion of our net operating loss carryforwards is subject to an annual limitation under Section 382 of the Internal Revenue Code due to changes in ownership. Based on our analysis, we do not believe such annual limitation will impact our realization of the net operating loss carryforwards as we anticipate utilizing them prior to 2022.

At December 31, 2016 we had gross federal and state research and development credit carryforwards of $47.5 million, U.S. foreign tax credit carryforwards of $22.5 million, and investment tax credits of $57.4 million available to reduce future federal and state income tax liabilities. If not used, the research and development credits, investment tax credits, and U.S. foreign tax credits will begin to expire in 2026 through 2036, 2026 through 2035, and 2024 through 2025, respectively.

A reconciliation of the beginning and ending amount of liabilities associated with uncertain tax positions for the years ended December 31, 2016, 2015, and 2014 is as follows (in thousands):

	2016	2015	2014
Unrecognized tax benefits, beginning of year	$141,755	$162,029	$183,239
Increases related to prior year tax positions	—	484	522
Decreases related to prior year tax positions	(6,119)	(2,693)	(2,513)
Decreases from lapse in statute of limitations	(14,421)	(13,827)	(28,649)
Decreases relating to settlements with authorities	(35,416)	(20,485)	(3,111)
Increases related to current tax positions	3,457	16,247	12,541
Unrecognized tax benefits, end of year	$ 89,256	$141,755	$162,029

If recognized, $86.1 million of unrecognized tax benefits would reduce our annual effective tax rate. Due to the uncertain and complex application of tax laws and regulations, it is possible that the ultimate resolution of uncertain tax positions may result in liabilities that could be materially different from these estimates. In such an event, we will record additional tax expense or tax benefit in the period in which such resolution occurs. Our policy is to recognize any interest and penalties that we might incur related to our tax positions as a component of income tax expense. We did not accrue any penalties related to these unrecognized tax benefits during 2016, 2015, or 2014. We also did not accrue any interest related to these unrecognized tax benefits in 2016, 2015, or 2014. It is reasonably possible that an additional $11.0 million of uncertain tax positions will be recognized within the next 12 months due to the expiration of the statute of limitations associated with such positions.

We are subject to audit by U.S. federal, state, local, and foreign tax authorities. During the year ended December 31, 2015, we settled a tax audit in Spain, which resulted in a discrete tax expense of $3.0 million. We are currently under examination in India, Chile, Germany, and the state of California. We believe that adequate provisions have been made for any adjustments that may result from tax examinations. However, the outcome of tax audits cannot be predicted with certainty. If any issues addressed by our tax audits are not resolved in a manner consistent with our expectations, we could be required to adjust our provision for income taxes in the period such resolution occurs.

The following table summarizes the tax years that are either currently under audit or remain open and subject to examination by the tax authorities in the most significant jurisdictions in which we operate:

	Tax Years
Australia	2011 - 2015
India	2014 - 2016
Malaysia	2010 - 2015
United States	2008 - 2009; 2012 - 2015

In certain of the jurisdictions noted above, we operate through more than one legal entity, each of which has different open years subject to examination. The table above presents the open years subject to examination for the most material of the legal entities in each jurisdiction. Additionally, tax years are not closed until the statute of limitations in each jurisdiction expires. In the jurisdictions noted above, the statute of limitations can extend beyond the open years subject to examination.

21. Net (Loss) Income per Share

Basic net (loss) income per share is computed by dividing net (loss) income by the weighted-average number of common shares outstanding for the period. Diluted net income per share is computed giving effect to all potentially dilutive common shares, including restricted and performance stock units and stock purchase plan shares, unless there is a net loss for the period. In computing diluted net income per share, we utilize the treasury stock method.

The calculation of basic and diluted net (loss) income per share for the years ended December 31, 2016, 2015, and 2014 was as follows (in thousands, except per share amounts):

	2016	2015	2014
Basic net (loss) income per share			
Numerator:			
Net (loss) income	$(357,964)	$546,421	$395,964
Denominator:			
Weighted-average common shares outstanding	102,866	100,886	100,048
Diluted net (loss) income per share			
Denominator:			
Weighted-average common shares outstanding	102,866	100,886	100,048
Effect of restricted and performance stock units and stock purchase plan shares	—	929	1,595
Weighted-average shares used in computing diluted net (loss) income per share	102,866	101,815	101,643
Net (loss) income per share:			
Basic	$ (3.48)	$ 5.42	$ 3.96
Diluted	$ (3.48)	$ 5.37	$ 3.90

The following table summarizes the potential shares of common stock that were excluded from the computation of diluted net income per share for the years ended December 31, 2016, 2015, and 2014 as they would have had an anti-dilutive effect (in thousands):

	2016	2015	2014
Anti-dilutive shares	753	48	70

22. Comprehensive (Loss) Income and Accumulated Other Comprehensive (Loss) Income

Comprehensive (loss) income, which includes foreign currency translation adjustments, unrealized gains and losses on available-for-sale securities, and unrealized gains and losses on derivative instruments designated and qualifying as cash flow hedges, the impact of which has been excluded from net (loss) income and reflected as components of stockholders' equity, was as follows for the years ended December 31, 2016, 2015, and 2014 (in thousands):

	2016	2015	2014
Net (loss) income	$(357,964)	$546,421	$395,964
Other comprehensive (loss) income, net of tax:			
Foreign currency translation adjustments	(7,409)	(16,432)	(19,147)
Unrealized gain (loss) on marketable securities and restricted investments for the period, net of tax of $(504), $1,248 and $(6,644)	16,898	(15,413)	90,868
Less: reclassification for gains included in net income, net of tax of $3,022, $0 and $83	(38,611)	(2)	(127)
Unrealized (loss) gain on marketable securities and restricted investments	(21,713)	(15,415)	90,741
Unrealized gain (loss) on derivative instruments for the period, net of tax of $(691), $(207) and $(711)	6,927	(8,572)	(1,777)
Less: reclassification for (gains) losses included in net income, net of tax of $0, $2,278 and $(150)	(3,192)	5,759	6,099
Unrealized gain (loss) on derivative instruments	3,735	(2,813)	4,322
Other comprehensive (loss) income, net of tax	(25,387)	(34,660)	75,916
Comprehensive (loss) income	$(383,351)	$511,761	$471,880

The following tables reflect the changes in accumulated other comprehensive (loss) income, net of tax, for the years ended December 31, 2016 and 2015 (in thousands):

	Foreign Currency Translation Adjustment	Unrealized Gain (Loss) on Marketable Securities and Restricted Investments	Unrealized Gain (Loss) on Derivative Instruments	Total
Balance as of December 31, 2014	$(53,337)	$102,299	$ 1,178	$ 50,140
Other comprehensive loss before reclassifications	(16,432)	(15,413)	(8,572)	(40,417)
Amounts reclassified from accumulated other comprehensive (loss) income	—	(2)	5,759	5,757
Net other comprehensive loss	(16,432)	(15,415)	(2,813)	(34,660)
Balance as of December 31, 2015	(69,769)	86,884	(1,635)	15,480
Other comprehensive (loss) income before reclassifications	(7,409)	16,898	6,927	16,416
Amounts reclassified from accumulated other comprehensive (loss) income	—	(38,611)	(3,192)	(41,803)
Net other comprehensive (loss) income	(7,409)	(21,713)	3,735	(25,387)
Balance as of December 31, 2016	$(77,178)	$ 65,171	$ 2,100	$ (9,907)

Details of Accumulated Other Comprehensive Income or Loss	Amounts Reclassified for the Year Ended December 31, 2016	Amounts Reclassified for the Year Ended December 31, 2015	Income Statement Line Item
Gains and (losses) on marketable securities and restricted investments:			
	$41,633	$ 2	Other income (expense), net
	(3,022)	—	Tax expense
	$38,611	$ 2	Total, net of tax
Gains and (losses) on derivative contracts:			
Foreign exchange forward contracts	$ —	$ 1,782	Net sales
Foreign exchange forward contracts	—	5,509	Cost of sales
Cross-currency swap contract	4,896	(10,135)	Foreign currency loss, net
Foreign exchange forward, interest rate, and cross-currency swap contracts	(1,704)	(637)	Interest expense, net
	3,192	(3,481)	Total before tax
	—	(2,278)	Tax expense
	$ 3,192	$ (5,759)	Total, net of tax

23. Segment and Geographical Information

We operate our business in two segments. Our components segment involves the design, manufacture, and sale of CdTe solar modules, which convert sunlight into electricity. Third-party customers of our components segment include integrators and operators of PV solar power systems. Our second segment is our fully integrated systems business ("systems segment"), through which we provide complete turn-key PV solar power systems, or solar solutions, that draw upon our capabilities, which include (i) project development, (ii) EPC services, and (iii) O&M services. We may provide our full EPC services or any combination of individual products and services within our EPC capabilities depending upon the customer and market opportunity. All of our systems segment products and services are for PV solar power systems, which primarily use our solar modules, and we sell such products and services to utilities, independent power producers, commercial and industrial companies, and other system owners. Additionally within our systems segment, we may temporarily own and operate certain of our PV solar power systems for a period of time based on strategic opportunities.

Our Chief Operating Decision Maker ("CODM"), consisting of certain members of our senior executive officers, views both the manufacturing of solar modules from our components segment and our ability to provide customers with a complete PV solar power system through our fully integrated systems segment as the primary drivers of our resource allocation, profitability, and cash flows. Our components segment contributes to our operating results by providing the fundamental technologies and solar modules that drive our business, and our systems segment contributes to our operating results by using these modules as part of a range of comprehensive PV solar energy solutions to meet our customers' needs.

In our reportable segment financial disclosures, we include an allocation of net sales value for all solar modules manufactured by our components segment and installed in projects sold or built by our systems segment in the net sales of our components segment. In the gross profit of our reportable segment disclosures, we include the corresponding cost of sales value for the solar modules installed in projects sold or built by our systems segment in the components segment. The cost of solar modules is comprised of the manufactured cost incurred by our components segment.

After we have determined the amount of revenue earned for our systems projects following the applicable accounting guidance for the underlying sales arrangements, we allocate module revenue from the systems segment to the components segment based on how our CODM strategically views these segments. The amount of module revenue allocated from the systems segment to the components segment approximates the average selling price for such solar modules as if the modules were sold to a third-party customer. In order to develop our estimate of the average selling price used for this revenue allocation, we utilize a combination of our actual third-party module sales transactions, our competitor benchmarking, and our internal pricing lists used to provide quotes to potential customers. This allocation methodology and the estimated average selling prices are consistent with how our CODM views the value proposition our components segment brings to a utility-scale system and how our CODM reviews financial information to assess the performance of the components segment. Our CODM generally makes decisions about allocating resources to our segments and assessing their performance based on gross profit. However, information about segment assets is not reported to the CODM for purposes of making such decisions. Accordingly, we have excluded such asset information from our reportable segment financial disclosures.

Financial information about our reportable segments during the years ended December 31, 2016, 2015, and 2014 was as follows (in thousands):

	Year Ended December 31, 2016		
	Components	Systems	Total
Net sales	$1,484,300	$1,467,028	$2,951,328
Gross profit	378,886	325,093	703,979
Depreciation and amortization expense	190,818	13,433	204,251
Goodwill(1)	14,462	—	14,462

	Year Ended December 31, 2015		
	Components	Systems	Total
Net sales	$1,389,579	$2,189,416	$3,578,995
Gross profit(2)	347,853	571,414	919,267
Depreciation and amortization expense	214,937	10,289	225,226
Goodwill	16,152	68,833	84,985

	Year Ended December 31, 2014		
	Components	Systems	Total
Net sales	$1,102,674	$2,288,513	$3,391,187
Gross profit	93,510	731,431	824,941
Depreciation and amortization expense	198,731	17,857	216,588

(1) As a result of our annual impairment testing in the fourth quarter of 2016, we determined that the estimated fair value of our systems reporting unit was less than its carrying value and that the implied fair value of goodwill for the systems reporting unit was zero. Accordingly, we recorded a goodwill impairment loss of $68.8 million. See Note 6 "Goodwill and Intangible Assets" to our consolidated financial statements for more information on this impairment.

(2) Gross profit for our components segment for the year ended December 31, 2015 included a $69.6 million benefit to cost of sales associated with the reduction in our module collection and recycling obligation. See Note 14 "Solar Module Collection and Recycling Liability" to our consolidated financial statements for more information regarding the change in this obligation.

Product Revenue

The following table sets forth the total amounts of solar module and solar power system net sales recognized for the years ended December 31, 2016, 2015, and 2014. For the purposes of the following table, (i) solar module revenue is composed of revenue from the sale of solar modules to third parties, which does not include any modules sold as part of our PV solar power systems, and (ii) solar power system revenue is composed of revenues from the sale of PV solar power systems and related products

and services, including any modules installed in such systems and any revenue generated by such systems (in thousands):

	2016	2015	2014
Solar module revenue	$ 675,453	$ 227,461	$ 228,319
Solar power system revenue	2,275,875	3,351,534	3,162,868
Net sales	$2,951,328	$3,578,995	$3,391,187

The following table presents net sales for the years ended December 31, 2016, 2015, and 2014 by geographic region, which is based on the customer country of invoicing (in thousands):

	2016	2015	2014
United States	$2,448,627	$3,117,797	$3,042,006
India	158,182	134,462	44,118
Spain	141,319	797	—
Jordan	120,134	—	—
Germany	14,498	63,709	121,941
Australia	9,568	185,064	157,152
All other foreign countries	59,000	77,166	25,970
Net sales	$2,951,328	$3,578,995	$3,391,187

The following table presents long-lived assets, which includes property, plant and equipment, PV solar power systems, project assets, and deferred project costs (current and noncurrent) as of December 31, 2016 and 2015 by geographic region, based on the physical location of the assets (in thousands):

	2016	2015
United States	$1,606,064	$1,434,891
Malaysia	339,230	788,086
Chile	260,751	270,623
All other foreign countries	373,573	183,354
Long-lived assets	$2,579,618	$2,676,954

24. Concentrations of Risks

Customer Concentration. The following customers each comprised 10% or more of our total net sales and/or 10% or more of our total accounts receivable for the years ended December 31, 2016, 2015, and 2014:

	2016		2015		2014	
	% of Total NS	% of Total A/R	% of Total NS	% of Total A/R	% of Total NS	% of Total A/R
Customer #1	38%	*	30%	21%	31%	*
Customer #2	13%	*	26%	48%	14%	*
Customer #3	10%	*	*	*	*	*
Customer #4	*	32%	*	*	*	*
Customer #5	*	12%	*	15%	*	*
Customer #6	*	*	*	*	15%	24%
Customer #7	*	*	*	*	*	14%
Customer #8	*	*	*	*	*	13%

* Net sales and/or accounts receivable to these customers were less than 10% of our total net sales and/or accounts receivable for the period.

Geographic Risk. During 2016, our third-party solar module and solar power system net sales were predominantly in the United States. The concentration of our net sales in a limited number of geographic regions exposes us to local economic, public policy, and regulatory risks in such regions.

Production. Our products include components that are available from a limited number of suppliers or sources. Shortages of essential components could occur due to increases in demand or interruptions of supply, thereby impairing our ability to meet customer demand for our products. Our solar modules are produced at our facilities in Perrysburg, Ohio and Kulim, Malaysia. Damage to or disruption of these facilities could interrupt our business and impair our ability to generate net sales.

INDEX TO EXHIBITS

Set forth below is a list of exhibits that are being filed or incorporated by reference into this Annual Report on Form 10-K:

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Date of First Filing	Exhibit Number	
3.1	Amended and Restated Certificate of Incorporation of First Solar, Inc.	S-1/A	333-135574	9/18/06	3.1	
3.2	Amended and Restated Bylaws of First Solar, Inc.	10-K	001-33156	2/24/16	3.2	
4.4†	Facility Agreement dated May 6, 2008 between First Solar Malaysia Sdn. Bhd., as borrower, and IKB Deutsche Industriebank AG, as arranger, NATIXIS Zweigniederlassung Deutschland, as facility agent and original lender, AKA Ausfuhrkredit-Gesellschaft mbH, as original lender, and NATIXIS Labuan Branch as security agent	8-K	001-33156	5/12/08	10.1	
4.5	First Demand Guaranty dated May 6, 2008 by First Solar, Inc. as guarantor, in favor of IKB Deutsche Industriebank AG, NATIXIS Zweigniederlassung Deutschland, AKA Ausfuhrkredit-Gesellschaft mbH and NATIXIS Labuan Branch	8-K	001-33156	5/12/08	10.2	
4.6	Credit Agreement, dated as of September 4, 2009, among First Solar, Inc., First Solar Manufacturing GmbH, the lenders party thereto, JPMorgan Chase Bank, N.A., as Administrative Agent, Bank of America and The Royal Bank of Scotland plc, as Documentation Agents, and Credit Suisse, Cayman Islands Branch, as Syndication Agent	8-K	001-33156	9/10/09	10.1	
4.7	Charge of Company Shares, dated as of September 4, 2009, between First Solar, Inc., as Chargor, and JPMorgan Chase Bank, N.A., as Security Agent, relating to 66% of the shares of First Solar FE Holdings Pte. Ltd. (Singapore)	8-K	001-33156	9/10/09	10.2	

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Date of First Filing	Exhibit Number	
4.8	German Share Pledge Agreements, dated as of September 4, 2009, between First Solar, Inc., First Solar Holdings GmbH, First Solar Manufacturing GmbH, First Solar GmbH, and JPMorgan Chase Bank, N.A., as Administrative Agent	8-K	001-33156	9/10/09	10.3	
4.9	Guarantee and Collateral Agreement, dated as of September 4, 2009, by First Solar, Inc. in favor of JPMorgan Chase Bank, N.A., as Administrative Agent	8-K	001-33156	9/10/09	10.4	
4.10	Guarantee, dated as of September 8, 2009, between First Solar Holdings GmbH, First Solar GmbH, First Solar Manufacturing GmbH, as German Guarantors, and JPMorgan Chase Bank, N.A., as Administrative Agent	8-K	001-33156	9/10/09	10.5	
4.11	Assignment Agreement, dated as of September 4, 2009, between First Solar Holdings GmbH and JPMorgan Chase Bank, N.A., as Administrative Agent	8-K	001-33156	9/10/09	10.6	
4.12	Assignment Agreement, dated as of September 4, 2009, between First Solar GmbH and JPMorgan Chase Bank, N.A., as Administrative Agent	8-K	001-33156	9/10/09	10.7	
4.13	Assignment Agreement, dated as of September 8, 2009, between First Solar Manufacturing GmbH and JPMorgan Chase Bank, N.A., as Administrative Agent	8-K	001-33156	9/10/09	10.8	
4.14	Security Trust Agreement, dated as of September 4, 2009, between First Solar, Inc., First Solar Holdings GmbH, First Solar GmbH, First Solar Manufacturing GmbH, as Security Grantors, JPMorgan Chase Bank, N.A., as Administrative Agent, and the other Secured Parties party thereto	8-K	001-33156	9/10/09	10.9	

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Date of First Filing	Exhibit Number	
4.15	Amended and Restated Credit Agreement, dated as of October 15, 2010, among First Solar, Inc., the borrowing subsidiaries party thereto, the lenders party thereto, Bank of America N.A. and The Royal Bank of Scotland PLC, as documentation agents, Credit Suisse, Cayman Islands Branch, as syndication agent and JPMorgan Chase Bank, N.A., as administrative agent	8-K	001-33156	10/20/10	10.1	
4.16	Facility Agreement dated as of August 3, 2011 among First Solar Malaysia Sdn. Bhd., Commerzbank Aktiengesellschaft, as arranger and original lender, Commerzbank Aktiengesellschaft, Luxembourg Branch, as facility agent and security agent, and Natixis Zweigniederlassung Deutschland, as arranger and original lender	10-Q	001-33156	8/5/11	10.1	
4.17	First Demand Guaranty, dated as of August 3, 2011, among First Solar, Inc., First Solar Malaysia Sdn. Bhd. and Commerzbank Aktiengesellschaft, Luxembourg Branch, as facility agent and security agent	10-Q	001-33156	8/5/11	10.2	
4.18	First Amendment, dated as of May 6, 2011, to the Amended and Restated Credit Agreement, dated as of October 15, 2010, among First Solar, Inc., the borrowing subsidiaries party thereto, the lenders party thereto, Bank of America, N.A. and The Royal Bank of Scotland plc, as documentation agents, Credit Suisse, Cayman Islands Branch, as syndication agent, and JPMorgan Chase Bank, N.A., as administrative agent	8-K	001-33156	5/12/11	10.1	
4.19	Credit Facility Agreement, dated as of May 18, 2011, among First Solar Manufacturing GmbH, Commerzbank Aktiengesellschaft, Luxembourg Branch, as security agent, and the additional finance parties party thereto	8-K	001-33156	5/24/11	10.1	

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Date of First Filing	Exhibit Number	
4.20	Guarantee Agreement, dates as of May 18, 2011, among First Solar, Inc., First Solar Manufacturing GmbH and Commerzbank Aktiengesellschaft, Luxembourg Branch	8-K	001-33156	5/24/11	10.2	
4.21	Facility Agreement, dated June 30, 2011, among First Solar Malaysia Sdn. Bhd., as borrower, First Solar, Inc., as guarantor, CIMB Investment Bank Berhad, Maybank Investment Bank Berhad and RHB Investment Bank Berhad, as arrangers, CIMB Investment Bank Berhad as facility agent and security agent, and the original lenders party thereto	8-K	001-33156	7/7/11	10.1	
4.22	Second Amendment and Waiver, dated as of June 30, 2011, to the Amended and Restated Credit Agreement, dated as of October 15, 2010, among First Solar, Inc., the lenders party thereto, Bank of America, N.A. and The Royal Bank of Scotland plc, as documentation agents, Credit Suisse, Cayman Islands Branch, as syndication agent, and JPMorgan Chase Bank, N.A., as administrative agent	8-K	001-33156	7/14/11	10.1	
4.23	Amendment Letter, dated as of November 8, 2011, to the Facility Agreement, dated June 30, 2011, among First Solar Malaysia Sdn. Bhd., as borrower, First Solar, Inc., as guarantor, CIMB Investment Bank Berhad, Maybank Investment Bank Berhad and RHB Investment Bank Berhad, as arrangers, CIMB Investment Bank Berhad as facility agent and security agent, and the original lenders party thereto	10-K	001-33156	2/29/12	10.1	

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Date of First Filing	Exhibit Number	
4.24	Third Amendment, dated as of October 23, 2012 to the Amended and Restated Credit Agreement dated as of October 15, 2010, among First Solar, Inc., the lenders party thereto, Bank of America, N.A. and The Royal Bank of Scotland plc, as documentation agents, Credit Suisse, Cayman Islands Branch, as syndication agent, and JPMorgan Chase Bank, N.A., as administrative agent	8-K	001-33156	10/26/12	10.1	
4.25	Amendment dated as of November 7, 2012 to the Export Financing Facility Agreement dated May 6, 2008 (as amended, the "Malaysian Facility Agreement") among FS Malaysia, the lenders party thereto, and Natixis Zweigniederlassung Deutschland, as Facility Agent.	10-K	001-33156	2/27/13	4.25	
4.26	Fourth Amendment dated as of July 15, 2013, to the Amended and Restated Credit Agreement, dated as of October 15, 2010, among First Solar, Inc., the lenders party thereto and JPMorgan Chase Bank, N.A., as administrative agent.	8-K	001-33156	7/15/13	10.1	
4.27	Amended and Restated Guarantee and Collateral Agreement, dated as of July 15, 2013, by First Solar, Inc., First Solar Electric, LLC, First Solar Electric (California), Inc. and First Solar Development, LLC in favor of JPMorgan Chase Bank, N.A., as administrative agent	8-K	001-33156	7/15/13	10.2	
4.28	Second Amendment to the Malaysian Euro Facility Agreement	10-Q	001-33156	8/7/13	4.1	
4.29	Fifth Amendment, dated as of June 3, 2015, to the Amended and Restated Credit Agreement, dated as of October 1, 2010, among First Solar, Inc., the lenders party thereto and JPMorgan Chase Bank, N.A., as administrative agent	8-K	001-33156	8/6/15	10.1	

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Date of First Filing	Exhibit Number	
4.30	Sixth Amendment, dated as of January 20, 2017, to the Amended and Restated Credit Agreement, dated as of October 1, 2010, among First Solar, Inc., the lenders party thereto and JPMorgan Chase Bank, N.A., as administrative agent	8-K	001-33156	1/26/17	10.1	
10.1†	Amendment to the Framework Agreement dated April 10, 2006 on the Sale and Purchase of Solar Modules between First Solar GmbH and Blitzstrom GmbH	10-K	001-33156	3/16/07	10.02	
10.2	Amended and Restated 2006 Omnibus Incentive Compensation Plan	10-Q	001-33156	5/1/09	10.2	
10.3	Form of Change in Control Severance Agreement	S-1/A	333-135574	10/25/06	10.15	
10.4	Form of Director and Officer Indemnification Agreement	10-K	001-33156	2/27/13	10.20	
10.5	First Solar, Inc. 2010 Omnibus Incentive Compensation Plan	DEF 14A	001-33156	4/20/10	App. A	
10.6	First Solar, Inc. Stock Purchase Plan	DEF 14A	001-33156	4/20/10	App. B	
10.7	Employment Agreement, dated March 15, 2011, and Change in Control Severance Agreement, dated April 4, 2011 between First Solar, Inc. and Mark Widmar	10-Q	001-33156	5/5/11	10.3	
10.8	Employment Agreement, dated March 14, 2012, and Change in Control Severance Agreement, dated March 19, 2012 between First Solar, Inc. and James Hughes	10-Q	001-33156	5/4/12	10.1	
10.9	Form of Key Senior Talent Equity Performance Program Grant Notice	10-Q	001-33156	5/4/12	10.2	
10.10	Amendment to Employment Agreement, effective as of May 3, 2012, between First Solar, Inc. and James Hughes, and Amendment to Non-Competition and Non-Solicitation Agreement, effective as of May 3, 2012, between First Solar, Inc. and James Hughes.	8-K	001-33156	5/11/12	10.1	

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Date of First Filing	Exhibit Number	
10.11	Employment Agreement, effective July 1, 2012, and Change in Control Severance Agreement, effective July 1, 2012 between First Solar, Inc. and Georges Antoun	10-Q	001-33156	8/3/12	10.1	
10.12	Non-Competition and Non-Solicitation Agreement, effective as of March 15, 2011, between First Solar, Inc. and Mark Widmar	10-Q	001-33156	5/7/13	10.2	
10.13	Change in Control Severance Agreement, effective as of July 1, 2012, between First Solar, Inc. and Georges Antoun	10-Q	001-33156	5/7/13	10.3	
10.14	Amendment to Change in Control Severance Agreement	10-Q	001-33156	8/7/13	10.1	
10.15	Employment Agreement, effective September 9, 2013, and Change in Control Severance Agreement, effective September 9, 2013 between First Solar, Inc. and Joseph Kishkill	10-K	001-33156	2/25/15	10.25	
10.16	Employment Agreement, effective March 3, 2014, and Change in Control Severance Agreement, effective March 3, 2014 between First Solar, Inc. and Paul Kaleta	10-K	001-33156	2/26/14	10.1	
10.17	Amended and Restated Corporate Governance Guidelines dated February 18, 2016	10-K	001-33156	2/24/16	10.17	
10.18	Restricted Cash Assignment of Deposits	10-Q	001-33156	8/6/14	10.2	
10.19	Master Formation Agreement by and between First Solar, Inc. and SunPower Corporation as of March 10, 2015	8-K	001-33156	3/11/15	2.1	
10.20	First Solar, Inc. 2015 Omnibus Incentive Compensation Plan	DEF 14A	001-33156	4/8/15	App. A	
10.21	Amended and Restated Limited Liability Company Agreement of 8Point3 Operating Company, LLC as of June 24, 2015	10-Q	001-33156	8/5/15	10.1	
10.22†	Amended and Restated Limited Liability Company Agreement of 8Point3 Holding Company, LLC as of June 24, 2015	10-Q	001-33156	8/5/15	10.2	

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Date of First Filing	Exhibit Number	
10.23	Employment Agreement, effective as of July 25, 2011, and Change in Control Severance Agreement, effective as of October 25, 2011 and amended as of August 1, 2013, between First Solar, Inc. and Philip Tymen deJong	10-K	001-33156	2/24/16	10.23	
10.24	Employment Agreement, effective as of May 1, 2012, and Change in Control Severance Agreement, effective as of May 1, 2012 and amended as of August 1, 2013, between First Solar, Inc. and Raffi Garabedian	10-K	001-33156	2/24/16	10.24	
10.25	Employment Agreement, effective as of December 31, 2012 and amended as of April 8, 2013, and Change in Control Severance Agreement, effective as of December 31, 2012 and amended as of August 1, 2013, between First Solar, Inc. and Timothy Rebhorn	10-K	001-33156	2/24/16	10.25	
10.26	Employment Agreement, effective as of February 17, 2016, and Change in Control Severance Agreement, effective as of February 17, 2016 between First Solar, Inc. and Chris Bueter	10-K	001-33156	2/24/16	10.26	
10.27	Amendment to Employment Agreement, effective as of July 1, 2016, between First Solar, Inc. and Mark Widmar, and Amendment to Non-Competition and Non-Solicitation Agreement, effective as of July 1, 2016, between First Solar, Inc. and Mark Widmar, and Second Amendment to Change-in-Control Severance Agreement, effective as of July 1, 2016, between First Solar, Inc. and Mark Widmar	10-Q	001-33156	4/28/16	10.1	
10.28	Second Amendment to Employment Agreement, effective as of June 30, 2016, between First Solar, Inc. and James Hughes	10-Q	001-33156	4/28/16	10.2	
10.29	Employment Agreement, effective as of October 24, 2016, and Change-in-Control Severance Agreement, effective as of October 24, 2016, between First Solar, Inc. and Alexander Bradley	10-Q	001-33156	11/3/16	10.1	

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Date of First Filing	Exhibit Number	
10.30	Form of RSU Award Agreement	—	—	—	—	X
10.31	Form of Option Award Agreement	—	—	—	—	X
10.32	Form of Share Award Agreement	—	—	—	—	X
10.33	Form of Performance Unit Award Agreement	—	—	—	—	X
10.34	Form of Cash Incentive Award Agreement	—	—	—	—	X
14.1	Code of Ethics	10-Q	001-33156	8/5/15	14.1	
21.1	List of Subsidiaries of First Solar, Inc.	—	—	—	—	X
23.1	Consent of Independent Registered Public Accounting Firm	—	—	—	—	X
31.01	Certification of Chief Executive Officer pursuant to Rule 13a-14(a) and 15d-14(a), as amended	—	—	—	—	X
31.02	Certification of Chief Financial Officer pursuant to Rule 13a-14(a) and 15d-14(a), as amended	—	—	—	—	X
32.01*	Certification of Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes Oxley Act of 2002	—	—	—	—	X
101.INS	XBRL Instance Document	—	—	—	—	X
101.SCH	XBRL Taxonomy Extension Schema Document	—	—	—	—	X
101.DEF	XBRL Definition Linkbase Document	—	—	—	—	X
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document	—	—	—	—	X
101.LAB	XBRL Taxonomy Label Linkbase Document	—	—	—	—	X
101.PRE	XBLR Taxonomy Extension Presentation Document	—	—	—	—	X

† Confidential treatment has been requested and granted for portions of this exhibit.

* This exhibit shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934 or otherwise subject to the liabilities of that section, nor shall it be deemed incorporated by reference in any filing under the Securities Act of 1933 or the Securities Exchange Act of 1934, whether made before or after the date hereof and irrespective of any general incorporation language in any filings.

Item 16. ***Form 10-K Summary***

None.

Corporate Information

EXECUTIVE MANAGEMENT

Mark Widmar, Chief Executive Officer
Alexander Bradley, Chief Financial Officer
Georges Antoun, Chief Commercial Officer
Philip Tymen deJong, Chief Operating Officer
Raffi Garabedian, Chief Technology Officer
Paul Kaleta, Executive Vice President and General Counsel
Chris Bueter, Executive Vice President, Human Resources

BOARD OF DIRECTORS

Michael J. Ahearn, Chairman of the Board
Sharon L. Allen, Independent Director
Richard Chapman, Independent Director
George Hambro, Independent Director
Craig Kennedy, Independent Director
James F. Nolan, Independent Director
William J. Post, Independent Director
J. Thomas Presby, Independent Director
Paul H. Stebbins, Independent Director
Michael Sweeney, Independent Director
Mark Widmar, Director and Chief Executive Officer

CORPORATE HEADQUARTERS

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TRANSFER AGENT

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250 Royal Street
Canton, MA 02021
Stockholder Services:
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www.computershare.com

STOCK LISTING

First Solar, Inc. common stock is traded on the Nasdaq Global Select Market, listed under FSLR.

INDEPENDENT AUDITORS

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All financial numbers in this report are based on U.S. Generally Accepted Accounting Principles.

This report contains forward-looking statements within the meaning of the United States federal securities laws. These forward-looking statements do not constitute guarantees of future performance. These forward-looking statements are based on current information and expectations, are subject to uncertainties and changes in circumstances, and involve a number of factors that could cause actual results to differ materially from those anticipated by these forward-looking statements, including risks described in the company's most recent annual report on Form 10-K, and other filings with the Securities and Exchange Commission. First Solar assumes no obligation to update any forward-looking information contained in this report or with respect to the information described herein.