FIRST SOLAR, INC.
Form 10-K
February 22, 2017

UNITED STATES SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549
Form 10-K
(Mark one)
[x] 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 [x] 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 [x]
Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes [x] No [ ]
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 [x] 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 [x] Accelerated filer [ ] Non-accelerated filer [ ] Smaller reporting company [ ]

(Do not check if a 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 [x]

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.

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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.”

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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," "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.

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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.

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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.

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- 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.

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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.

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- 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.

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- 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.

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- 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.

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- 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.

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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.

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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 x 4ft (60cm x 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.

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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.

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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.

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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.

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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.”

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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.

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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.

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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.

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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.

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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;

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- 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.

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- 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;

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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;

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- 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,

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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.

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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

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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.

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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.

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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.

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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.

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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.

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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;

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- 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;

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- 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.

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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.

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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.

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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.

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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;

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- 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.

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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.

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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.

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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.

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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.

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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.

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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.

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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.

* $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.

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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

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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.

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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.

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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.

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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.

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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.

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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.

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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.)

				As of December 31, 2016		
Project/Location	Project Size in MW AC (1)	PPA Contracted Partner	EPC Contract/Partner Developed Project	Expected Year Revenue Recognition Will Be Completed By	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

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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.

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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 %

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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 %				

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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.

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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.

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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:

	Years Ended			Change			
(Dollars in thousands)	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:

	Years Ended			Change		
(Dollars in thousands)	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.

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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:

	Years Ended			Change			
(Dollars in thousands)	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%

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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.

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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.

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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.

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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.

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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.

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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.

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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.

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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.

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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.

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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.

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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.

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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.

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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.

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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.

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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.

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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		