

Canadian Solar Inc.  
Form 20-F  
April 25, 2019

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**UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION**

Washington, D.C. 20549

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**Form 20-F**

(Mark  
One)

**REGISTRATION STATEMENT PURSUANT TO SECTION 12(b) OR 12(g) OF THE SECURITIES EXCHANGE ACT OF 1934**

**OR**

**ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**  
For the fiscal year ended December 31, 2018

**OR**

**TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**  
For the transition period from \_\_\_\_\_ to \_\_\_\_\_

**OR**

**SHELL COMPANY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**  
Date of event requiring this shell company report \_\_\_\_\_

Commission file number: 001-33107

**CANADIAN SOLAR INC.**

*(Exact name of Registrant as specified in its charter)*

N/A

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*(Translation of Registrant's name into English)*

Canada

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*(Jurisdiction of incorporation or organization)*

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545 Speedvale Avenue West  
Guelph, Ontario, Canada N1K 1E6

(Address of principal executive offices)

**Huifeng Chang, Chief Financial Officer**  
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(Name, Telephone, E-mail and/or Facsimile number and Address of Company Contact Person)

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

Title of Each Class	Name of Each Exchange on Which Registered
Common shares with no par value	The NASDAQ Stock Market LLC (The NASDAQ Global Select Market)

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

None

(Title of Class)

**Securities for which there is a reporting obligation pursuant to Section 15(d) of the Act:**

None

(Title of Class)

Indicate the number of outstanding shares of each of the issuer's classes of capital or common stock as of the close of the period covered by the annual report.

59,180,624 common shares issued and outstanding which were not subject to restrictions on voting, dividend rights and transferability, as of December 31, 2018.

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

If this report is an annual or transition report, indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934. Yes  No

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

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

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

Large accelerated filer  Accelerated filer

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Non-accelerated filer   
Emerging growth company

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

Indicate by check mark which basis of accounting the registrant has used to prepare the financial statements included in this filing: U.S. GAAP

International Financial Reporting Standards as issued by the International Accounting Standards Board  Other

If "Other" has been checked in response to the previous question, indicate by check mark which financial statement item the registrant has elected to follow. Item 17  Item 18

If this is an annual report, indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes  No

(APPLICABLE ONLY TO ISSUERS INVOLVED IN BANKRUPTCY PROCEEDINGS DURING THE PAST FIVE YEARS)

Indicate by check mark whether the registrant has filed all documents and reports required to be filed by Sections 12, 13 or 15(d) of the Securities Exchange Act of 1934 subsequent to the distribution of securities under a plan confirmed by a court. Yes  No

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The term "new or revised financial accounting standard" refers to any update issued by the Financial Accounting Standards Board to its Accounting Standards Codification after April 5, 2012.

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**INTRODUCTION**

Unless otherwise indicated, references in this annual report on Form 20-F to:

"AC" and "DC" refer to alternating current and direct current, respectively;

"AUD" and "Australian dollars" refer to the legal currency of Australia;

"BRL" and "Brazilian reals" refer to the legal currency of Brazil.

"China" and the "PRC" refer to the People's Republic of China, excluding, for the purposes of this annual report on Form 20-F, Taiwan and the special administrative regions of Hong Kong and Macau;

"COD" refers to completion of development;

"CSI," "we," "us," "our company" and "our" refer to Canadian Solar Inc., a Canadian company, its predecessor entities and its consolidated subsidiaries;

"C\$" and "Canadian dollars" refer to the legal currency of Canada;

"EPC" refers to engineering, procurement and construction;

"EU" refers to the European Union.

"FIT" refers to feed-in tariff;

"MSS" refers to module and system solutions;

"O&M services" refers to operation and maintenance services;

"PPA" refers to power purchase agreement;

"PV" refers to photovoltaic. The photovoltaic effect is a process by which sunlight is converted into electricity;

"RMB" and "Renminbi" refer to the legal currency of China;

"SEC" refers to the U.S. Securities and Exchange Commission

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"shares" and "common shares" refer to common shares, with no par value, of Canadian Solar Inc.;

"THB" and "Thai Bhat" refer to the legal currency of Thailand;

"U.S." refers to the United States of America;

"W," "kW," "MW" and "GW" refer to watts, kilowatts, megawatts and gigawatts, respectively;

"\$," "US\$" and "U.S. dollars" refer to the legal currency of U.S.;

"€" and "Euro" refer to the legal currency of the Economic and Monetary Union of the European Union;

"£" and "British pounds" refer to the legal currency of the United Kingdom; and

"¥," "JPY" and "Japanese yen" refer to the legal currency of Japan;

This annual report on Form 20-F includes our audited consolidated financial statements for the years ended December 31, 2016, 2017 and 2018 and as of December 31, 2017 and 2018.

We use the noon buying rate in The City of New York for cable transfers in Renminbi, Euros, British pounds, Japanese yen, Canadian dollars, Australian dollars, Thai Baht and Brazilian reals per U.S. dollar as certified for customs purposes by the Federal Reserve Bank of New York to translate

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Renminbi, Euros, British pounds, Japanese yen, Canadian dollars, Australian dollars, Thai Baht and Brazilian reals to U.S. dollars not otherwise recorded in our consolidated financial statements and included elsewhere in this annual report. Unless otherwise stated, the translation of Renminbi, Euros, British pounds, Japanese yen, Canadian dollars, Australian dollars, Thai Baht and Brazilian reals into U.S. dollars was made by the noon buying rate in effect on December 31, 2018, which was RMB6.8755 to \$1.00, €0.8729 to \$1.00, £0.7835 to \$1.00, ¥109.70 to \$1.00, C\$1.3644 to \$1.00, AUD1.4192 to \$1.00, THB32.3100 to \$1.00 and BRL3.8804 to \$1.00. We make no representation that the Renminbi, Euro, British pounds, Japanese yen, Canadian dollar, Australian dollars, Thai Baht, Brazilian reals or U.S. dollar amounts referred to in this annual report on Form 20-F could have been or could be converted into U.S. dollars, Euros, British pounds, Japanese yen, Canadian dollars, Australian dollars, Thai Baht, Brazilian reals or Renminbi, as the case may be, at any particular rate or at all. See "Item 3. Key Information D. Risk Factors Risks Related to Our Company and Our Industry Fluctuations in exchange rates could adversely affect our business, including our financial condition and results of operations."

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**FORWARD-LOOKING INFORMATION**

This annual report on Form 20-F contains forward-looking statements that relate to future events, including our future operating results, our prospects and our future financial performance and condition, results of operations, business strategy and financial needs, all of which are largely based on our current expectations and projections. These forward-looking statements are made under the "safe harbor" provisions of the U.S. Private Securities Litigation Reform Act of 1995. You can identify these statements by terminology such as "may," "will," "expect," "anticipate," "future," "intend," "plan," "believe," "estimate," "is/are likely to" or similar expressions. Forward-looking statements involve inherent risks and uncertainties. These forward-looking statements include, among other things, statements relating to:

our expectations regarding the worldwide demand for electricity and the market for solar power;

our beliefs regarding the importance of environmentally friendly power generation;

our beliefs regarding the value of and ability to monetize our portfolio of solar power projects;

our expectations regarding governmental support for solar power;

our beliefs regarding the rate at which solar power technologies will be adopted and the continued growth of the solar power industry;

our beliefs regarding the competitiveness of our solar power products and services;

our expectations with respect to increased revenue growth and improved profitability;

our expectations regarding the benefits to be derived from our supply chain management and vertical integration manufacturing strategy;

our ability to continue developing our in-house solar component production capability and our expectations regarding the timing of the expansion of our internal production capacity;

our ability to secure adequate volumes of silicon, solar wafers and cells at competitive cost to support our solar module production;

our beliefs regarding the effects of environmental regulation;

our future business development, results of operations and financial condition;

competition from other manufacturers of solar power products and conventional energy suppliers;

our ability to successfully expand our range of products and services and to successfully execute plans for our energy segment;



our ability to develop, build and sell solar power projects in Canada, the U.S., Japan, China, Brazil, India, Mexico, the United Kingdom, Australia and elsewhere; and

our beliefs with respect to the outcome of the investigations and litigation to which we are a party.

Known and unknown risks, uncertainties and other factors may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by forward-looking statements. See "Item 3. Key Information D. Risk Factors" for a discussion of some of the risk factors that may affect our business and results of operations. These risks are not exhaustive. Other sections of this annual report may include additional factors that could adversely influence our business and financial performance. Moreover, because we operate in an emerging and evolving industry, new risk factors may emerge from time to time. We cannot predict all risk factors, nor can we assess the impact of all or any of these factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those expressed or implied in any forward-looking statement. We do not undertake any obligation to update or revise the forward-looking statements except as required under applicable law.

Table of Contents**PART I****ITEM 1. IDENTITY OF DIRECTORS, SENIOR MANAGEMENT AND ADVISERS**

Not applicable.

**ITEM 2. OFFER STATISTICS AND EXPECTED TIMETABLE**

Not applicable.

**ITEM 3. KEY INFORMATION****A. Selected Financial Data***Selected Consolidated Financial and Operating Data*

The following selected statement of operations data for the years ended December 31, 2016, 2017 and 2018 and balance sheet data as of December 31, 2017 and 2018 have been derived from our consolidated financial statements, which are included elsewhere in this annual report on Form 20-F. You should read the selected consolidated financial and operating data in conjunction with those financial statements and the related notes and "Item 5. Operating and Financial Review and Prospects" included elsewhere in this annual report on Form 20-F.

Our selected consolidated statement of operations data for the years ended December 31, 2014 and 2015 and our consolidated balance sheet data as of December 31, 2014, 2015 and 2016 were derived from our consolidated financial statements that are not included in this annual report.

All of our financial statements are prepared and presented in accordance with U.S. generally accepted accounting principles, or U.S. GAAP. Our historical results are not necessarily indicative of results for any future periods.

	For the years ended, or as of, December 31,				
	2014	2015	2016	2017	2018
	(In thousands of \$, except share and per share data, and operating data and percentages)				
<b>Statement of operations data:</b>					
Net revenues	2,960,627	3,467,626	2,853,078	3,390,393	3,744,512
Income from operations	366,314	247,371	93,164	269,345	364,657
Net income	243,887	173,316	65,275	102,983	242,431
Net income attributable to Canadian Solar Inc.	239,502	171,861	65,249	99,572	237,070
Earnings per share, basic	4.40	3.08	1.13	1.71	4.02
Shares used in computation, basic	54,408,037	55,728,903	57,524,349	58,167,004	58,914,540
Earnings per share, diluted	4.11	2.93	1.12	1.69	3.88
Shares used in computation, diluted	59,354,615	60,426,056	58,059,063	61,548,158	62,291,670
<b>Other financial data:</b>					
Gross margin	19.6%	16.6%	14.6%	18.8%	20.7%
Operating margin	12.4%	7.1%	3.3%	7.9%	9.7%
Net margin	8.2%	5.0%	2.3%	3.0%	6.5%

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	For the years ended, or as of, December 31,				
	2014	2015	2016	2017	2018
	(In thousands of \$, except share and per share data, and operating data and percentages)				
Selected operating data:					
Solar power products sold					
(in MW)					
MSS segment <sup>(1)</sup>	2,436.4	4,085.0	5,138.1	6,538.8	5,916.1
Energy segment <sup>(2)</sup>	376.2	298.8	65.7	354.3	901.1
Total	2,812.6	4,383.8	5,203.8	6,893.1	6,817.2
Average selling price (in \$ per watt)					
Solar module	0.67	0.58	0.51	0.40	0.34
<b>Balance Sheet Data:</b>					
Net current assets (liabilities)	366,621	(392,231)	69,697	(22,709)	125,964
Total assets	3,068,115	4,413,928	5,406,606	5,889,627	4,892,658
Net assets	729,574	832,510	899,390	1,059,775	1,272,845
Long-term borrowings	134,300	606,577	493,455	404,341	393,614
Convertible notes	145,691	146,674	125,569	126,476	127,428
Common shares	675,236	677,103	701,283	702,162	702,931
Number of shares outstanding	55,161,856	55,965,443	57,830,149	58,496,685	59,180,624

(1) Numbers are calculated after inter-segmentation elimination and represent solar power products sold to third parties.

(2) Numbers are calculated after inter-segmentation elimination.

#### **B. Capitalization and Indebtedness**

Not applicable.

#### **C. Reasons for the Offer and Use of Proceeds**

Not applicable.

#### **D. Risk Factors**

##### **Risks Related to Our Company and Our Industry**

*We may be adversely affected by volatile solar power market and industry conditions; in particular, the demand for our solar power products and services may decline, which may reduce our revenues and earnings.*

Our business is affected by conditions in the solar power market and industry. We believe that the solar power market and industry may from time to time experience oversupply. When this occurs, many solar power project developers, solar system installers and solar power product distributors that purchase solar power products, including solar modules from manufacturers like us, may be adversely affected. Although our shipments of solar modules increased year-over-year in 2016 and 2017, they slightly decreased in 2018. The average selling prices for our solar modules declined from the previous year in each of 2016, 2017 and 2018. Over the past several quarters, oversupply conditions across the value chain and foreign trade disputes have affected industry-wide demand and put pressure on average selling prices, resulting in lower revenue for many industry participants. If the supply of solar modules grows faster than demand, and if governments continue to reduce

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financial support for the solar industry and impose trade barriers for solar power products, demand and the average selling price for our products could be materially and adversely affected.

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The solar power market is still at a relatively early stage of development and future demand for solar power products and services is uncertain. Market data for the solar power industry is not as readily available as for more established industries, where trends are more reliably assessed from data gathered over a longer period of time. In addition, demand for solar power products and services in our targeted markets, including Europe, the U.S., Japan, China, Brazil and India may not develop or may develop to a lesser extent than we anticipate. Many factors may affect the viability of solar power technology and the demand for solar power products, including:

the cost-effectiveness, performance and reliability of solar power products and services, including our solar power projects, compared to conventional and other renewable energy sources and products and services;

the availability of government subsidies and incentives to support the development of the solar power industry;

the availability and cost of capital, including long-term debt and tax equity, for solar power projects;

the success of other alternative energy technologies, such as wind power, hydroelectric power, geothermal power and biomass fuel;

fluctuations in economic and market conditions that affect the viability of conventional and other renewable energy sources, such as increases or decreases in the prices of oil, gas and other fossil fuels;

capital expenditures by end users of solar power products and services, which tend to decrease when the economy slows; and

the availability of favorable regulation for solar power within the electric power industry and the broader energy industry.

If solar power technology is not suitable for widespread adoption or if sufficient demand for solar power products and services does not develop or takes longer to develop than we anticipate, our revenues may suffer and we may be unable to sustain our profitability. Currently, demand for solar power products and services in Europe generally remains weak as a result of reductions in FITs in Germany and the elimination of FITs in Italy, the two largest European markets over the past several years. Although demand in other regions, including China, Japan, the U.S. and India, as well as many other emerging markets in Asia, the Middle East and Africa, has offset the decline in European demand, we cannot assure you that this demand will be sustainable or that any recent positive trends in supply or demand balance will persist.

***The operating results of our energy segment and the mix of revenues from our MSS and energy segments may be subject to significant fluctuation due to a number of factors, including the unpredictability of the timing of the development and sale of our solar power projects and our inability to find third party buyers for our solar power projects in a timely manner, on favorable terms and conditions, or at all.***

Our energy segment develops, sells and/or operates and maintains solar power projects primarily in Canada, Japan, the U.S., China, Brazil, India, Mexico, the United Kingdom and Australia. Our solar project development activities have grown over the past several years through a combination of organic growth and acquisitions. After completing their development, we either sell our solar power projects to third party buyers, or operate them under power purchase agreements, or PPAs, or other contractual arrangements with utility companies or grid operators. Revenues from our energy segment decreased by \$869.5 million, or 0.89 times, from \$975.9 million for the year ended December 31, 2015 to \$106.4 million for the year ended December 31, 2016, and then increased by \$571.0 million, or 5.4 times, to \$677.5 million for the year ended December 31, 2017, and further then increased by

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\$898.1 million, or 1.3 times, to \$1,575.6 million for the year ended December 31, 2018. We intend to monetize the majority of our current portfolio of solar power projects in operation with an estimated resale value of approximately \$1.2 billion as of February 28, 2019. We also intend to monetize certain of our projects before they reach their respective COD. However, there is no assurance whether or when we will be able to realize their estimated resale value.

The operating results of our energy segment may be subject to significant period-over-period fluctuations for a variety of reasons, including but not limited to the unpredictability of the timing of the development and sale of our solar power projects, changes in market conditions after we have committed to projects, availability of project financing and changes in government regulations and policies, all of which may result in the cancellation of or delays in the development of projects, inability to monetize or delays in monetizing projects or changes in amounts realized on monetization of projects. If a project is canceled, abandoned or deemed unlikely to occur, we will charge all prior capital costs as an operating expense in the quarter in which such determination is made, which could materially adversely affect operating results.

Further, the mix of revenues from our MSS and energy segments can fluctuate dramatically from quarter to quarter, which may adversely affect our margins and financial results in any given period.

Any of the foregoing may cause us to miss our financial guidance for a given period, which could adversely impact the market price for our common stock and our liquidity.

***The execution of our growth strategy depends upon the continued availability of third-party financing arrangements for our customers, which is affected by general economic conditions. Tight credit markets could depress demand or prices for solar power products and services, hamper our expansion and materially affect our results of operations.***

Most solar power projects, including our own, require financing for development and construction with a mixture of equity and third-party funding. The cost of capital affects both the demand and price of solar power systems. A high cost of capital may materially reduce the internal rate of return for solar power projects and therefore put downward pressure on the prices of both solar systems and solar modules, which typically comprise a major part of the cost of solar power projects.

Furthermore, solar power projects compete for capital with other forms of fixed income investments such as government and corporate bonds. Some classes of investors compare the returns of solar power projects with bond yields and expect a similar or higher internal rate of return, adjusted for risk and liquidity. Higher interest rates could increase the cost of existing funding and present an obstacle for future funding that would otherwise spur the growth of the solar power industry. In addition, higher bond yields could result in increased yield expectations for solar power projects, which would result in lower system prices. In the event that suitable funding is unavailable, our customers may be unable to pay for products they have agreed to purchase. It may also be difficult to collect payments from customers facing liquidity challenges due to either customer defaults or financial institution defaults on project loans. Constricted credit markets may impede our expansion plans and materially and adversely affect our results of operations. Concerns about government deficits and debt in the EU have increased bond spreads in certain solar markets, such as Greece, Spain, Italy and Portugal. The cash flow of a solar power project is often derived from government-funded or government-backed FITs. Consequently, the availability and cost of funding solar power projects is determined in part based on the perceived sovereign credit risk of the country where a particular project is located. Therefore, credit agency downgrades of nations in the EU or elsewhere could decrease the credit available for solar power projects, increase the expected rate of return as compared to bond yields, and increase the cost of debt financing for solar power projects in countries with a higher perceived sovereign credit risk.

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In light of the uncertainty in the global credit and lending environment, we cannot make assurances that financial institutions will continue to offer funding to solar power project developers at reasonable costs. An increase in interest rates or a decrease in funding of capital projects within the global financial market could make it difficult to fund solar power systems and potentially reduce the demand for solar modules and/or reduce the average selling prices for solar modules, which may materially and adversely affect our business, results of operations, financial condition and prospects.

***Our future success depends partly on our ability to expand the pipeline of our energy segment in several key markets, which exposes us to a number of risks and uncertainties.***

Historically, our MSS segment has accounted for the majority of our net revenues, contributing 96.2%, 80.0% and 57.9% of our net revenues in 2016, 2017 and 2018, respectively. However, we have, in recent years, increased our investment in, and management attention on, our energy segment, which primarily consists of solar power project development and sale, operating solar power projects and sale of electricity.

While we plan to continue to monetize our current portfolio of solar power projects in operation, we also intend to grow our energy segment by developing and selling or operating more solar projects, including those that we develop and those that we acquire from third-parties. As we do, we will be increasingly exposed to the risks associated with these activities. Further, our future success largely depends on our ability to expand our solar power project pipeline. The risks and uncertainties associated with our energy segment and our ability to expand our solar power project pipeline include:

the uncertainty of being able to sell the projects, receive full payment for them upon completion, or receive payment in a timely manner;

the need to raise significant additional funds to develop greenfield or purchase late-stage solar power projects, which we may be unable to obtain on commercially reasonable terms or at all;

delays and cost overruns as a result of a number of factors, many of which are beyond our control, including delays in regulatory approvals, construction, grid-connection and customer acceptance testing;

delays or denial of required regulatory approvals by relevant government authorities;

diversion of significant management attention and other resources; and

failure to execute our project pipeline expansion plan effectively.

If we are unable to successfully expand our energy segment, and, in particular, our solar power project pipeline, we may be unable to expand our business, maintain our competitive position, improve our profitability and generate cash flows.

***Governments may revise, reduce or eliminate subsidies and economic incentives for solar energy, which could cause demand for our products to decline.***

The market for on-grid applications, where solar power supplements the electricity a customer purchases from the utility network or sells to a utility under a FIT, depends largely on the availability and size of government subsidy programs and economic incentives. At present, the cost of solar power exceeds retail electricity rates in many locations. Government incentives vary by geographic market. Governments in many countries, most notably China, Germany, Italy, the Czech Republic, the U.S., Japan, Canada (Ontario), South Korea, India, France, Australia and the United Kingdom, have provided incentives in the form of FITs, rebates, tax credits, renewable portfolio standards and other incentives. These governments have implemented mandates to end-users, distributors, system integrators and manufacturers of solar power products to promote the use of solar energy in on-grid applications and to reduce dependency on other forms of energy. Some of these government mandates and economic incentives have been or are scheduled to be reduced or eliminated altogether. For example, the June 1, 2018 announcement by the National Development and Reform Commission, or the NDRC, that it intended to reduce subsidies for ground mounted and distributed PV projects and to decrease China's FIT policy has adversely impacted the solar markets. It is likely that this trend will continue, and that, eventually, subsidies for solar energy will be phased out completely.





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While solar power projects may continue to offer attractive internal rates of return, it is unlikely that these rates will be as high as they were in the past. If internal rates of return fall below an acceptable rate for project investors, and governments continue to reduce or eliminate subsidies for solar energy, this may cause a decrease in demand and considerable downward pressure on solar systems and therefore negatively impact both solar module prices and the value of our solar power projects. The reduction, modification or elimination of government subsidies and economic incentives in one or more of our markets could therefore materially and adversely affect the growth of such markets or result in increased price competition, either of which could cause our revenues to decline and harm our financial results.

***General global economic conditions may have an adverse impact on our operating performance and results of operations.***

The demand for solar power products and services is influenced by macroeconomic factors, such as global economic conditions, demand for electricity, supply and prices of other energy products, such as oil, coal and natural gas, as well as government regulations and policies concerning the electric utility industry, the solar and other alternative energy industries and the environment. As a result of global economic conditions, some governments may implement measures that reduce the FITs and other subsidies designed to benefit the solar industry. During 2016, 2017 and 2018, a decrease in solar power tariffs in many markets placed downward pressure on the price of solar systems in those and other markets. In addition, reductions in oil and coal prices may reduce the demand for and the prices of solar power products and services. Our growth and profitability depend on the demand for and the prices of solar power products and services. If we experience negative market and industry conditions and demand for solar power projects and solar power products and services weakens as a result, our business and results of operations may be adversely affected.

***Imposition of antidumping and countervailing duty orders or safeguard measures in one or more markets may result in additional costs to our customers, which could materially or adversely affect our business, results of operations, financial conditions and future prospects.***

We have been in the past, and may be in the future, subject to the imposition of antidumping and countervailing duty orders in one or more of the markets in which we sell our products. In the past, we have been subject to the imposition of antidumping and countervailing duty orders in the U.S., the EU and Canada and have, as a result, been party to lengthy proceedings related thereto. See "Item 8. Financial Information A. Consolidated Statements and Other Financial Information Legal and Administrative Proceedings." The U.S., the EU and Canada are important markets for us. Ongoing proceedings relating to past, and the imposition of any new, antidumping and countervailing duty orders or safeguard measures in these markets may result in additional costs to us and/or our customers, which may materially and adversely affect our business, results of operations, financial conditions and future prospects.

***Our project development and construction activities may not be successful, projects under development may not receive required permits, property rights, EPC agreements, interconnection and transmission arrangements, and financing or construction of projects may not commence or continue as scheduled, all of which could increase our costs, delay or cancel a project, and have a material adverse effect on our revenue and profitability.***

The development and construction of solar power projects involve known and unknown risks. We may be required to invest significant amounts of money for land and interconnection rights, preliminary engineering and permitting and may incur legal and other expenses before we can determine whether a project is feasible. Success in developing a particular project is contingent upon, among other things:

securing land rights and related permits, including satisfactory environmental assessments;

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receipt of required land use and construction permits and approvals;

receipt of rights to interconnect to the electric grid;

availability of transmission capacity, potential upgrade costs to the transmission grid and other system constraints;

payment of interconnection and other deposits (some of which are non-refundable);

negotiation of satisfactory EPC agreements; and

obtaining construction financing, including debt, equity and tax credits.

In addition, successful completion of a particular project may be adversely affected by numerous factors, including:

delays in obtaining and maintaining required governmental permits and approvals;

potential challenges from local residents, environmental organizations, and others who may not support the project;

unforeseen engineering problems; subsurface land conditions; construction delays; cost over-runs; labor, equipment and materials supply shortages or disruptions (including labor strikes);

additional complexities when conducting project development or construction activities in foreign jurisdictions, including compliance with the U.S. Foreign Corrupt Practices Act and other applicable local laws and customs; and

force majeure events, including adverse weather conditions and other events beyond our control.

If we are unable to complete the development of a solar power project or we fail to meet any agreed upon system-level capacity or energy output guarantees or warranties (including our 25 year power output performance guarantees) or other contract terms, or our projects cause grid interference or other damage, the EPC or other agreements related to the project may be terminated and/or we may be subject to significant damages, penalties and other obligations relating to the project, including obligations to repair, replace or supplement materials for the project.

We may enter into fixed-price EPC agreements in which we act as the general contractor for our customers in connection with the installation of their solar power systems. All essential costs are estimated at the time of entering into the EPC agreement for a particular project, and these costs 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 and the subcontractors, suppliers and other parties involved in the project. In addition, we require qualified, licensed subcontractors to install most of our solar power systems. Shortages of skilled labor could significantly delay a project or otherwise increase our costs. Should miscalculations in planning a project occur, including those due to unexpected increases in commodity prices or labor costs, or delays in execution occur and we are unable to increase the EPC sales price commensurately, we may not achieve our expected margins or our results of operations may be adversely affected.

***Developing and operating solar power projects exposes us to different risks than producing solar modules.***

The development of solar power projects can take many months or years to complete and may be delayed for reasons beyond our control. It often requires us to make significant up-front payments for, among other things, land rights and permitting in advance of commencing construction, and revenue from these projects may not be recognized for several additional months following contract signing. Any inability or significant delays in entering into sales contracts with customers after making such up-front payments could adversely affect our business and

results of operations. Furthermore, we may

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become constrained in our ability to simultaneously fund our other business operations and invest in other projects.

In contrast to producing solar modules, developing solar power projects requires more management attention to negotiate the terms of our engagement and monitor the progress of the projects which may divert management's attention from other matters. Our revenue and liquidity may be adversely affected to the extent the market for solar power projects weakens or we are not able to successfully complete the customer acceptance testing due to technical difficulties, equipment failure, or adverse weather, and we are unable to sell our solar power projects at prices and on terms and timing that are acceptable to us.

Our energy segment also includes operating solar power projects and selling electricity to the local or national grid or other power purchasers. As a result, we are subject to a variety of risks associated with intense market competition, changing regulations and policies, insufficient demand for solar power, technological advancements and the failure of our power generation facilities.

***We face a number of risks involving PPAs and project-level financing arrangements, including failure or delay in entering into PPAs, defaults by counterparties and contingent contractual terms such as price adjustment, termination, buy-out, acceleration and other clauses, all of which could materially and adversely affect our energy segment, financial condition, results of operations and cash flows.***

We may not be able to enter into PPAs for our solar power projects due to intense competition, increased supply of electricity from other sources, reduction in retail electricity prices, changes in government policies or other factors. There is a limited pool of potential buyers for electricity generated by our solar power plants since the transmission and distribution of electricity is either monopolized or highly concentrated in most jurisdictions. The willingness of buyers to purchase electricity from an independent power producer may be based on a number of factors and not solely on pricing and surety of supply. Failure to enter into PPAs on terms favorable to us, or at all, would negatively impact our revenue and our decisions regarding the development of additional power plants. We may experience delays in entering into PPAs for some of our solar power projects or may not be able to replace an expiring PPA with a contract on equivalent terms and conditions, or otherwise at prices that permit operation of the related facility on a profitable basis. Any delay in entering into PPAs may adversely affect our ability to enjoy the cash flows generated by such projects. If we are unable to replace an expiring PPA with an acceptable new PPA, the affected site may temporarily or permanently cease operations, which could materially and adversely affect our financial condition, results of operations and cash flows.

Substantially all of the electric power generated by our solar power projects will be sold under long-term PPAs with public utilities, licensed suppliers or commercial, industrial or government end users. We expect our future projects will also have long-term PPAs or similar offtake arrangements such as FIT programs. If, for any reason, any of the purchasers of power under these contracts are unable or unwilling to fulfill their related contractual obligations, they refuse to accept delivery of the power delivered thereunder or they otherwise terminate them prior to their expiration, our assets, liabilities, business, financial condition, results of operations and cash flows could be materially and adversely affected. Further, to the extent any of our power purchasers are, or are controlled by, governmental entities, our facilities may be subject to legislative or other political action that may impair their contractual performance or contain contractual remedies that do not provide adequate compensation in the event of a counterparty default.

Some of our PPAs are subject to price adjustments over time. If the price under any of our PPAs is reduced below a level that makes a project economically viable, our financial conditions, cash flow and results of operations could be materially and adversely affected. Further, some of our long-term PPAs do not include inflation-based price increases. Certain of the PPAs for our own projects and those

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for projects that we have acquired and may acquire in the future contain or may contain provisions that allow the offtake purchaser to terminate or buy out the project or require us to pay liquidated damages upon the occurrence of certain events. If these provisions are exercised, our financial condition, results of operations and cash flows could be materially and adversely affected. Additionally, certain of the project-level financing arrangements for projects allow, and certain of the projects that we may acquire in the future may allow, the lenders or investors to accelerate the repayment of the financing arrangement in the event that the related PPA is terminated or if certain operating thresholds or performance measures are not achieved within specified time periods. Certain of our PPAs and project-level financing arrangements include, and in the future may include, provisions that would permit the counterparty to terminate the contract or accelerate maturity in the event we own, directly or indirectly, less than 50% of the combined voting power or, in some cases, if we cease to be the majority owner, directly or indirectly, of the applicable project subsidiary. The termination of any of our PPAs or the acceleration of the maturity of any of our financing arrangements as a result of a change-in-control event could have a material adverse effect on our financial condition, results of operations and cash flows.

***If the supply of solar wafers and cells increases in line with increases in the supply of polysilicon, then the corresponding oversupply of solar wafers, cells and modules may cause substantial downward pressure on the prices of our products and reduce our revenues and earnings.***

Silicon production capacity has expanded rapidly in recent years. As a result of this expansion, coupled with the global economic downturn, the solar industry has experienced an oversupply of high-purity silicon since the beginning of 2009. This has contributed to an oversupply of solar wafers, cells and modules and resulted in substantial downward pressure on prices throughout the value chain. Demand for solar power products remained soft through 2012 but began to pick up in the second half of 2013. The average selling price of our solar modules decreased from \$0.67 per watt in 2014 to \$0.58 per watt in 2015, \$0.51 per watt in 2016, \$0.40 per watt in 2017 and \$0.34 per watt in 2018. Although we believe that there is a relative balance between capacity and demand at low prices due to industry consolidation, increases in solar module production in excess of market demand may result in further downward pressure on the price of solar wafers, cells and modules, including our products. Increasing competition could also result in us losing sales or market share. Moreover, due to fluctuations in the supply and price of solar power products throughout the value chain, we may not be able, on an ongoing basis, to procure silicon, wafers and cells at reasonable costs if any of the above risks materializes. If we are unable, on an ongoing basis, to procure silicon, solar wafers and solar cells at reasonable prices or mark up the price of our solar modules to cover our manufacturing and operating costs, our revenues and margins will be adversely impacted, either due to higher costs compared to our competitors or due to further write-downs of inventory, or both. In addition, our market share could decline if our competitors are able to price their products more competitively.

***Long-term supply agreements may make it difficult for us to adjust our raw material costs should prices decrease. Also, if we terminate any of these agreements, we may not be able to recover all or any part of the advance payments we have made to these suppliers and we may be subject to litigation.***

We have entered into a number of long-term supply agreements with several silicon and wafer suppliers in order to secure a stable supply of raw materials to meet our production requirements. These suppliers included GCL-Poly Energy Holdings Limited, or GCL, Deutsche Solar AG, or Deutsche Solar, and Jiangxi LDK Solar Hi-Tech Co., Ltd., or LDK.

In 2009 and thereafter, we amended our agreements with certain of these suppliers to adjust the purchase price to prevailing market prices at the time we place a purchase order and to reduce the quantity of products that we were required to purchase. Under our supply agreements with certain suppliers, and consistent with historical industry practice, we make advance payments prior to

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scheduled delivery dates. These advance payments were made without collateral and are to be credited against the purchase prices payable by us. As of December 31, 2018, the balance of the advance payments that we have made to GCL, Deutsche Solar and LDK totaled \$23.3 million.

Under our 12-year wafer supply agreement with Deutsche Solar, we purchased the contracted volume for 2009 but did not purchase the contracted volumes for 2010 and 2011. The agreement contains a provision stating that, if we do not order the contracted volume in a given year, Deutsche Solar can invoice us for the difference at the full contract price. We believe that these take-or-pay provisions of the agreement are void under German law. In December 2011, Deutsche Solar gave notice to us to terminate the agreement with immediate effect. Deutsche Solar stated that the reason for the termination was an alleged breach of the agreement by us. In the notice, Deutsche Solar reserved its right to claim damages of €148.6 million in court. As a result of the termination, we reclassified the accrued loss on firm purchase commitments reserve of \$27.9 million as of December 31, 2011 to loss contingency accruals. In addition, we made a full bad debt allowance of \$17.4 million against the balance of advance payments to Deutsche Solar. The accrued amount of \$27.9 million represents our best estimate for our loss contingency. Deutsche Solar did not specify the basis for its claimed damages of €148.6 million in the notice.

In 2007, we entered into a three-year agreement, or the 2007 Supply Contract, with LDK under which we purchased specified quantities of silicon wafers and LDK converted our reclaimed silicon feedstock into wafers. In June 2008, we entered into two 10-year wafer supply agreements, or the 2008 Supply Contracts, with LDK, under which we agreed to purchase specified volumes of wafers at pre-determined prices each year, commencing January 1, 2009. In April 2010, we gave LDK termination notices for the 2007 Supply Contract and the 2008 Supply Contracts on the grounds that they refused to deduct from the selling price the deposits paid by us previously. We also initiated arbitration proceedings against LDK under the supply contracts, seeking a refund of the initial deposits that we paid to them. On October 19, 2015, we reached a settlement agreement with LDK, or the 2015 Settlement Agreement. See "Item 8. Financial Information A. Consolidated Statements and Other Financial Information Legal and Administrative Proceedings." We recorded a charge of \$20.8 million related to the 2015 Settlement Agreement in general and administrative expense in the third quarter of 2015.

On May 19, 2016, we received a copy of a bill of complaint from the Jiangxi Xinyu Intermediate People's Court, or the Xinyu Intermediate Court, in which LDK's receiver applied to the court for an order to revoke the 2015 Settlement Agreement pursuant to PRC bankruptcy law, and requested us to pay an amount that had been waived by LDK under the 2015 Settlement Agreement. In May 2017, the Xinyu Intermediate Court made a judgment in favor of LDK's receiver, revoking the 2015 Settlement Agreement and requiring CSI Cells to pay RMB 58.5 million to LDK's receiver and bear court expenses of RMB 0.8 million. We recorded a \$8.6 million provision in the first quarter of 2017 and we appealed the judgment. In November 2017, the Jiangxi High People's Court, or Jiangxi High Court, dismissed our appeal and upheld the original judgment. We then appealed this judgment to the Supreme People's Court of The People's Republic of China, or the Supreme Court. In January 2018, the Supreme Court put our appeal on record pending examination but later dismissed our request for retrial. In March 2018, LDK's receiver applied to the Xinyu Intermediate Court for compulsory execution of its judgment. In April 2018, the Xinyu Intermediate Court deducted RMB59.5 million from our accounts in execution of its judgment.

We have in the past entered into long-term supply agreements for silicon wafers or solar cells with fixed price and quantity terms. If, during the term of these agreements, the price of materials decreases significantly and we are unable to renegotiate favorable terms with our suppliers, we may be placed at a competitive disadvantage compared to our competitors, and our earnings could decline. In addition, if demand for our solar power products decreases, yet our supply agreements require us to purchase more silicon wafers and solar cells than required to meet customer demand, we may incur costs

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associated with carrying excess inventory. To the extent that we are not able to pass these increased costs on to our customers, our business, cash flows, financial condition and results of operations may be materially and adversely affected. If our suppliers file lawsuits against us for early termination of these contracts, such events could be costly, may divert management's attention and other resources away from our business, and could have a material and adverse effect on our reputation, business, financial condition, results of operations and prospects.

***We are subject to numerous laws, regulations and policies at the national, regional and local levels of government in the markets where we do business. Any changes to these laws, regulations and policies may present technical, regulatory and economic barriers to the purchase and use of solar power products, solar projects and solar electricity, which may significantly reduce demand for our products and services or otherwise adversely affect our financial performance.***

We are subject to a variety of laws and regulations in the markets where we do business, some of which may conflict with each other and all of which are subject to change. These laws and regulations include energy regulations, export and import restrictions, tax laws and regulations, environmental regulations, labor laws and other government requirements, approvals, permits and licenses. We also face trade barriers and trade remedies such as export requirements, tariffs, taxes and other restrictions and expenses, including antidumping and countervailing duty orders, which could increase the prices of our products and make us less competitive in some countries. See " Imposition of antidumping and countervailing duty orders or safeguard measures in one or more markets may result in additional costs to our customers, which could materially or adversely affect our business, results of operations, financial conditions and future prospects."

In the countries where we do business, the market for solar power products, solar projects and solar electricity is heavily influenced by national, state and local government regulations and policies concerning the electric utility industry, as well as policies disseminated by electric utilities. These regulations and policies often relate to electricity pricing and technical interconnection of customer-owned electricity generation, and could deter further investment in the research and development of alternative energy sources as well as customer purchases of solar power technology, which could result in a significant reduction in the potential demand for our solar power products, solar projects and solar electricity.

In our MSS segment, we expect that our solar power products and their installation will continue to be subject to national, state and local regulations and policies relating to safety, utility interconnection and metering, construction, environmental protection, and other related matters. Any new regulations or policies pertaining to our solar power products may result in significant additional expenses to us, our resellers and customers, which could cause a significant reduction in demand for our solar power products.

In our energy segment, we are subject to numerous national, regional and local laws and regulations. Changes in applicable energy laws or regulations, or in the interpretations of these laws and regulations, could result in increased compliance costs or the need for additional capital expenditures. If we fail to comply with these requirements, we could also be subject to civil or criminal liability and the imposition of fines. Further, national, regional or local regulations and policies could be changed to provide for new rate programs that undermine the economic returns for both new and existing projects by charging additional, non-negotiable fixed or demand charges or other fees or reductions in the number of projects allowed under net metering policies. National, regional or local government energy policies, law and regulation supporting the creation of wholesale energy markets are currently, and may continue to be, subject to challenges, modifications and restructuring proposals, which may result in limitations on the commercial strategies available to us for the sale of our power.

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Regulatory changes in a jurisdiction where we are developing a solar power project may make the continued development of the project infeasible or economically disadvantageous and any expenditure that we have previously made on the project may be wholly or partially written off. Any of these changes could significantly increase the regulatory related compliance and other expenses incurred by the projects and could significantly reduce or entirely eliminate any potential revenues that can be generated by one or more of the projects or result in significant additional expenses to us, our offtakers and customers, which could materially and adversely affect our business, financial condition, results of operations and cash flows.

We also face regulatory risks imposed by various transmission providers and operators, including regional transmission operators and independent system operators, and their corresponding market rules. These regulations may contain provisions that limit access to the transmission grid or allocate scarce transmission capacity in a particular manner, which could materially and adversely affect our business, financial condition, results of operations and cash flows.

We are also subject to the Foreign Corrupt Practices Act of 1977, or the FCPA, the U.S. domestic bribery statute contained in 18 U.S.C. § 201, the U.S. Travel Act, the USA PATRIOT Act and other anti-corruption laws that prohibit companies and their employees and third-party intermediaries from authorizing, offering or providing, directly or indirectly, improper payments or benefits to foreign government officials, political parties and private-sector recipients for the purpose of obtaining or retaining business in countries in which we conduct activities. We face significant liabilities if we fail to comply with these laws. We may have direct or indirect interactions with officials and employees of government agencies or state-owned or affiliated entities. For example, in China, we may contract with and sell electricity to the national grid, a state-owned enterprise. In other countries where we develop, acquire or sell solar projects, we need to obtain various approvals, permits and licenses from the local or national governments. We can be held liable for the illegal activities of our employees, representatives, contractors, partners, and agents, even if we do not explicitly authorize such activities. Any violation of the FCPA or other applicable anticorruption laws could result in whistleblower complaints, adverse media coverage, investigations, loss of export privileges, severe criminal or civil sanctions, which could have a material adverse effect on our business, financial condition, results of operation, cash flows and reputation. In addition, responding to any enforcement action may result in the diversion of management's attention and resources, significant defense costs and other professional fees.

***Because the markets in which we compete are highly competitive and evolving quickly, because many of our competitors have greater resources than we do or are more adaptive, and because we have a limited track record in our energy segment, we may not be able to compete successfully and we may not be able to maintain or increase our market share.***

In our MSS segment, we face intense competition from a large number of competitors, including non-China-based companies such as First Solar, Inc., or First Solar, and SunPower Corporation, or SunPower, and China-based companies such as Trina Solar Limited, or Trina, JinkoSolar Holding Co., Limited, or Jinko, JA Solar Co., Limited, or JA Solar, and Hanwha Q Cells Co., Ltd., or Hanwha Q Cells. Some of our competitors are developing or are currently producing products based on new solar power technologies that may ultimately have costs similar to or lower than our projected costs. These include products based on thin film PV technology, which requires either no silicon or significantly less silicon to produce than crystalline silicon solar modules, such as the ones that we produce, and is less susceptible to increases in silicon costs. Some of our competitors have longer operating histories, greater name and brand recognition, access to larger customer bases, greater resources and significantly greater economies of scale than we do. In addition, some of our competitors may have stronger relationships or may enter into exclusive relationships with some of the key distributors or system integrators to whom we sell our products. As a result, they may be able to respond more quickly to



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changing customer demands or devote greater resources to the development, promotion and sales of their products. Some of our competitors have more diversified product offerings, which may better position them to withstand a decline in demand for solar power products. Some of our competitors are more vertically integrated than we are, from upstream silicon wafer manufacturing to solar power system integration. This may allow them to capture higher margins or have lower costs. In addition, new competitors or alliances among existing competitors could emerge and rapidly acquire significant market share. If we fail to compete successfully, our business will suffer and we may not be able to maintain or increase our market share.

For our energy segment, we compete in a more diversified and complicated landscape since the commercial and regulatory environments for solar power project development and operation vary significantly from region to region and country to country. Our primary competitors are local and international developers and operators of solar power projects. Some of our competitors may have advantages over us in terms of greater experience or resources in the operation, financing, technical support and management of solar power projects, in any particular markets or in general.

Our energy segment has a global footprint and develops solar power projects primarily in Canada, Japan, the U.S., China, Brazil, India, Mexico, the United Kingdom and Australia. There is no guarantee that we can compete successfully in the markets in which we currently operate or the ones we plan to enter in the future. For example, in certain of our target markets, such as China, state-owned and private companies have emerged to take advantage of the significant market opportunity created by attractive financial incentives and favorable regulatory environment provided by the governments. State-owned companies may have stronger relationships with local governments in certain regions and private companies may be more focused and experienced in developing solar power projects in the markets where we compete. Accordingly, we need to continue to be able to compete against both state-owned and private companies in these markets. Our energy segment also provides EPC services in China, Canada, Australia and other countries. We face intense competition from other service providers in those markets.

Since our energy segment includes electricity generation and sale, we believe that our primary competitors in the electricity generation markets in which we operate are the incumbent utilities that supply energy to our potential customers under highly regulated rate and tariff structures. We compete with these conventional utilities primarily based on price, predictability of price, reliability of delivery and the ease with which customers can switch to electricity generated by our solar energy projects.

As the solar power and renewable energy industry grows and evolves, we will also face new competitors who are not currently in the market. Our failure to adapt to changing market conditions and to compete successfully with existing or new competitors will limit our growth and will have a material adverse effect on our business and prospects.

***We face risks associated with the marketing, distribution and sale of our solar power products and services internationally.***

The international marketing, sale, distribution and delivery of our products and services expose us to a number of risks, including:

fluctuating sources of revenues;

difficulties in staffing and managing overseas operations;

fluctuations in foreign currency exchange rates;

differing regulatory and tax regimes across different markets;

the increased cost of understanding local markets and trends and developing and maintaining an effective marketing and distribution presence in various countries;

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the difficulty of providing customer service and support in various countries;

the difficulty of managing our sales channels effectively as we expand beyond distributors to include direct sales to systems integrators, end users and installers;

the difficulty of managing the development, construction and sale of our solar power projects on a timely and profitable basis as a result of technical difficulties, commercial disputes with our customers and changes in regulations, among other factors;

the difficulties and costs of complying with the different commercial, legal and regulatory requirements in the overseas markets in which we operate;

any failure to develop appropriate risk management and internal control structures tailored to overseas operations;

any inability to obtain, maintain or enforce intellectual property rights;

any unanticipated changes in prevailing economic conditions and regulatory requirements; and

any trade barriers such as export requirements, tariffs, taxes and other restrictions and expenses, which could increase the prices of our products and make us less competitive in some countries.

If we are unable to effectively manage these risks, our ability to expand our business abroad could suffer.

Our revenue sources have fluctuated significantly over recent years. For example, in 2008, 89.5% of our revenues were attributable to Europe, while only 4.6% and 5.9% were attributable to the Americas and to Asia and other regions, respectively. However, in 2016, Europe and other regions contributed 9.6% while the Americas contributed 38.7% and Asia contributed 46.9% of our revenues; in 2017, Europe and other regions contributed 10.5% while the Americas contributed 32.7% and Asia contributed 56.8% of our revenues; and in 2018, Europe and other regions contributed 18.6% while the Americas contributed 39.4% and Asia contributed 42.0% of our revenues. As we shift the focus of our operations between different regions of the world, we have limited time to prepare for and address the risks identified above. Furthermore, some of these risks, such as currency fluctuations, will increase as our revenue contribution from certain global regions becomes more prominent. This may adversely influence our financial performance.

***Our future business depends in part on our ability to make strategic acquisitions, investments and divestitures and to establish and maintain strategic relationships, and our failure to do so could have a material and adverse effect on our market penetration and revenue growth.***

We frequently look for and evaluate opportunities to acquire other businesses, make strategic investments or establish strategic relationships with third parties to improve our market position or expand our products and services. When market conditions permit and opportunities arise, we may also consider divesting part of our current business to focus management attention and improve our operating efficiency. Investments, strategic acquisitions and relationships with third parties could subject us to a number of risks, including risks associated with integrating their personnel, operations, services, internal controls and financial reporting into our operations as well as the loss of control of operations that are material to our business. If we divest any material part of our business, particularly our upstream manufacturing business or downstream energy business, we may not be able to benefit from our investment and experience associated with that part of the business and may be subject to intensified concentration risks with less flexibility to respond to market fluctuations. Moreover, it could be expensive to make strategic acquisitions, investments, divestitures and establish and maintain relationships, and we may be subject to the risk of non-performance by a counterparty, which may in turn lead to monetary losses that materially and adversely affect our business. We cannot assure you that we will be able to successfully make strategic acquisitions and investments and successfully

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integrate them into our operations, or make strategic divestitures or establish strategic relationships with third parties that will prove to be effective for our business. Our inability to do so could materially and adversely affect our market penetration, our revenue growth and our profitability.

***Our significant international operations expose us to a number of risks, including unfavorable political, regulatory, labor and tax conditions in the countries where we operate.***

We intend to continue to extend our global reach and capture market share in various global markets. In doing so, we will be exposed to various risks, including political, regulatory, labor and tax risks. However, many perceive globalization to be in retreat and protectionism on the rise, as evidenced by the decision of Great Britain to leave the EU and the decision of U.S. President Donald Trump, to impose punitive tariffs on goods imported from China and renegotiate certain trade arrangements, such as the North American Free Trade Agreement. If trade tensions increase among the U.S., China and other countries, it may have a material adverse effect on our international operations. Furthermore, we may need to make substantial investments in our overseas operations, both initially and on an ongoing basis, in order to attain longer-term sustainable returns. These investments could negatively impact our financial performance before sustainable profitability is recognized.

***We face risks related to private securities litigation.***

Our company and certain of our directors and executive officers were named as defendants in class action lawsuits in the U.S. and Canada alleging that our financial disclosures during 2009 and early 2010 were false or misleading and in violation of U.S. federal securities laws and Ontario securities laws, respectively. The lawsuits in the U.S. were consolidated into one class action, which was dismissed with prejudice by the district court in March 2013. The dismissal was subsequently affirmed by the circuit court in December 2013. The lawsuit in Canada is still on-going. As a preliminary matter, we challenged the Ontario Court's jurisdiction to hear the plaintiff's claim, but this motion was unsuccessful. In September 2014, the plaintiff obtained an order granting him leave to assert the statutory cause of action under the Ontario Securities Act for certain of his misrepresentation claims. In January 2015, the plaintiff obtained an order for class certification in respect of the claims for which he obtained leave to assert the statutory cause of action under the Ontario Securities Act, for certain negligent misrepresentation claims and for oppression remedy claims advanced under the Canada Business Corporations Act, or CBCA. The Court dismissed our application for leave to appeal. The class action is at the merits stage and the common issues trial is scheduled to proceed in October 2019. See "Item 8. Financial Information A. Consolidated Statements and Other Financial Information Legal and Administrative Proceedings." If the case goes to trial, the Canadian action could require significant management time and attention and result in significant legal expenses. There is no guarantee that we will not become party to additional lawsuits. In addition, we are generally obligated, to the extent permitted by law, to indemnify our directors and officers who are named defendants in these lawsuits. If we were to lose a lawsuit, we may be required to pay judgments or settlements and incur expenses in aggregate amounts that could have a material and adverse effect on our financial condition or results of operations.

***Our quarterly operating results may fluctuate from period to period.***

Our quarterly operating results may fluctuate from period to period based on a number of factors, including:

the average selling prices of our solar power products and services;

the timing of completion of construction of our solar power projects;

the timing and pricing of project sales;

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changes in payments from power purchasers of solar power plants already in operation;

the rate and cost at which we are able to expand our internal production capacity;

the availability and cost of solar cells and wafers from our suppliers and toll manufacturers;

the availability and cost of raw materials, particularly high-purity silicon;

changes in government incentive programs and regulations, particularly in our key and target markets;

the unpredictable volume and timing of customer orders;

the loss of one or more key customers or the significant reduction or postponement of orders;

the availability and cost of external financing for on-grid and off-grid solar power applications;

acquisition and investment costs;

the timing of successful completion of customer acceptance testing of our solar power projects;

geopolitical turmoil and natural disasters within any of the countries in which we operate;

foreign currency fluctuations, particularly in British pounds, Renminbi, Canadian dollars, Japanese yen and Euros;

our ability to establish and expand customer relationships;

changes in our manufacturing costs;

the timing of new products or technology introduced or announced by our competitors;

fluctuations in electricity rates due to changes in fossil fuel prices or other factors;

allowances for doubtful accounts and advances to suppliers;

inventory write-downs;

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impairment of property, plant and equipment;

impairment of project assets;

impairment of investments in affiliates;

depreciation charges relating to under-utilized assets;

loss on firm purchase commitments under long-term supply agreements;

construction progress of solar power projects and related revenue recognition; and

antidumping and countervailing duty costs and/or antidumping and countervailing duty true-up charges.

We base our planned operating expenses in part on our expectations of future revenues. A significant portion of our expenses will be fixed in the short-term. If our revenues for a particular quarter are lower than we expect, we may not be able to reduce our operating expenses proportionately, which would harm our operating results for the quarter. As a result, our results of operations may fluctuate from quarter to quarter and our interim and annual financial results may differ from our historical performance.

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***Fluctuations in exchange rates could adversely affect our business, including our financial condition and results of operations.***

The majority of our sales in 2016, 2017 and 2018 were denominated in U.S. dollars, Renminbi and Japanese yen, with the remainder in other currencies such as Euros, Brazilian reals and Canadian dollars. Our Renminbi costs and expenses are primarily related to the sourcing of solar cells, silicon wafers and silicon, other raw materials, including aluminium and silver paste, toll manufacturing fees, labor costs and local overhead expenses within the PRC. From time to time, we enter into loan arrangements with commercial banks that are denominated primarily in Renminbi, U.S. dollars and Japanese yen. Most of our cash and cash equivalents and restricted cash are denominated in Renminbi. Fluctuations in exchange rates, particularly between the U.S. dollar, Renminbi, British pound, Canadian dollar, Japanese yen and Euro, may result in foreign exchange gains or losses. We recorded net foreign exchange gain of \$25.4 million and net foreign exchange loss of \$23.4 million in 2016 and 2017, respectively, and net foreign exchange gain of \$6.5 million in 2018.

The value of the Renminbi against the U.S. dollar, the Euro and other currencies is affected by, among other things, changes in China's political and economic conditions and China's foreign exchange policies. In late 2005, China amended its policy of tracking the value of the Renminbi to the U.S. dollar to instead track against a basket of foreign currencies. This change caused the Renminbi to appreciate significantly against the U.S. dollar over the following three years. In June 2010, the PRC government announced that it would allow greater flexibility for the Renminbi to fluctuate against the U.S. dollar, which resulted in further appreciation of the Renminbi, although in 2014, the value of the Renminbi depreciated against the U.S. dollar. In 2015, the PRC government changed the way it calculates the mid-point price of the Renminbi against the U.S. dollar, requiring the market-makers who submit for the People's Bank of China's reference rates to consider the previous day's closing spot rate and foreign-exchange demand and supply, as well as changes in major currency rates. This change resulted in further depreciation of the Renminbi against the U.S. dollar. In 2016, the Renminbi continued to depreciate against the U.S. dollar. In response, the Chinese government imposed restrictions on capital outflows. In October 2016, the International Monetary Fund added the Renminbi into the Special Drawing Rights currency basket. However, the status of the Renminbi as an international currency is still being tested by the market. We cannot provide any assurances that the policy of the PRC government will not affect, or the manner in which it may affect the exchange rate between the Renminbi and the U.S. dollar or other foreign currencies in the future.

Since 2008, we have hedged part of our foreign currency exposures against the U.S. dollar using foreign currency forward or option contracts. In addition to the requirement to provide collateral when entering into hedging contracts, there are notional limits on the size of the hedging transactions that we may enter into with any particular counterparty at any given time. While these contracts are intended to reduce the effects of fluctuations in foreign currency exchange rates, our hedging strategy does not mitigate the longer-term impacts of changes to foreign exchange rates. We do not enter into these contracts for trading purposes or speculation, and we believe all these contracts are entered into as hedges of underlying transactions. Nonetheless, these contracts involve costs and risks of their own in the form of transaction costs, credit requirements and counterparty risk. Also, the effectiveness of our hedging program may be limited due to cost effectiveness, cash management, exchange rate visibility and associated management judgment on exchange rate movement, and downside protection. We recorded gains on change in foreign currency derivatives of \$4.8 million in 2016, losses on change in foreign currency derivatives of \$2.6 million in 2017 and \$18.4 million in 2018. The gains or losses on change in foreign currency derivatives are related to our hedging program. If our hedging program is not successful, or if we change our hedging activities in the future, we may experience significant unexpected expenses from fluctuations in exchange rates.

Volatility in foreign exchange rates will hamper, to some extent, our ability to plan our pricing strategy. To the extent that we are unable to pass along increased costs resulting from exchange rate fluctuations to our customers, our profitability may be adversely impacted. As a result, fluctuations in foreign currency exchange rates could have a material and adverse effect on our financial condition and results of operations.

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***A change in our effective tax rate can have a significant adverse impact on our business.***

A number of factors may adversely impact our future effective tax rates, such as the jurisdictions in which our profits are determined to be earned and taxed; changes in the valuation of our deferred tax assets and liabilities; adjustments to provisional taxes upon finalization of various tax returns; adjustments to the interpretation of transfer pricing standards; changes in available tax credits; changes in stock-based compensation expenses; changes in tax laws or the interpretation of tax laws (e.g., in connection with fundamental U.S. international tax reform); changes in U.S. GAAP; expiration of or the inability to renew tax rulings or tax holiday incentives; and the repatriation of non-U.S. earnings for which we have not previously provided for U.S. taxes. A change in our effective tax rate due to any of these factors may adversely influence our future results of operations.

***Seasonal variations in demand linked to construction cycles and weather conditions may influence our results of operations.***

Our business is subject to seasonal variations in demand linked to construction cycles and weather conditions. Purchases of solar power products and services tend to decrease during the winter months in several markets, such as Canada, due to adverse weather conditions that can complicate the installation of solar power systems and negatively impact the construction schedules of solar power projects. Demand from some countries, such as the U.S. and China, may also be subject to significant seasonality. Seasonal variations could adversely affect our results of operations and make them more volatile and unpredictable.

***Our future success depends partly on our ability to maintain and expand our solar components manufacturing capacity, which exposes us to a number of risks and uncertainties.***

Our future success depends partly on our ability to maintain and expand our solar components manufacturing capacity. If we are unable to do so, we may be unable to expand our business, maintain our competitive position, and improve our profitability. Our ability to expand our solar components production capacity is subject to risks and uncertainties, including:

the need to raise significant additional funds to purchase raw materials and to build additional manufacturing facilities, which we may be unable to obtain on commercially reasonable terms or at all;

delays and cost overruns as a result of a number of factors, many of which are beyond our control, including delays in equipment delivery by vendors;

delays or denial of required regulatory approvals by relevant government authorities;

diversion of significant management attention and other resources; and

failure to execute our expansion plan effectively.

If we are unable to maintain and expand our internal production capacity, we may be unable to expand our business as planned. Moreover, even if we do maintain and expand our production capacity, we might still not be able to generate sufficient customer demand for our solar power products to support the increased production levels.

***We may be unable to generate sufficient cash flows or have access to external financing necessary to fund planned operations and make adequate capital investments in manufacturing capacity and solar project development.***

We anticipate that our operating and capital expenditures requirements may increase. To develop new products, support future growth, achieve operating efficiencies and maintain product quality, we may need to make significant capital investments in manufacturing technology, facilities and capital

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equipment, research and development, and product and process technology. We also anticipate that our operating costs may increase as we expand our manufacturing operations, hire additional personnel, increase our sales and marketing efforts, invest in joint ventures and acquisitions, and continue our research and development efforts with respect to our products and manufacturing technologies.

Our operations are capital intensive. We rely on working capital financing substantially from Chinese banks for our manufacturing operations. We cannot guarantee that we will continue to be able to extend existing or obtain new working capital financing on commercially reasonable terms or at all. See " Our dependence on Chinese banks to extend our existing loans and provide additional loans exposes us to funding risks, which may materially and adversely affect our operations." Also, even though we are a publicly-traded company, we may not be able to raise capital via public equity and debt issuances due to market conditions and other factors, many of which are beyond our control. Our ability to obtain external financing is subject to a variety of uncertainties, including:

our future financial condition, results of operations and cash flows;

general market conditions for financing activities by manufacturers of solar power products; and

economic, political and other conditions in the PRC and elsewhere.

If we are unable to obtain funding in a timely manner and on commercially acceptable terms, our growth prospects and future profitability may be adversely affected.

Construction of our solar power projects may require us to obtain project financing. If we are unable to obtain project financing, or if project financing is only available on terms which are not acceptable to us, we may be unable to fully execute our business plan. In addition, we generally expect to sell our projects to tax-oriented, strategic industry and other investors. Such investors may not be available or may only have limited resources, in which case our ability to sell our projects may be hindered or delayed and our business, financial condition, and results of operations may be adversely affected. There can be no assurance that we will be able to generate sufficient cash flows, find other sources of capital to fund our operations and solar power projects, make adequate capital investments to remain competitive in terms of technology development and cost efficiency required by our projects. If adequate funds and alternative resources are not available on acceptable terms, our ability to fund our operations, develop and construct solar power projects, develop and expand our manufacturing operations and distribution network, maintain our research and development efforts or otherwise respond to competitive pressures would be significantly impaired. Our inability to do the foregoing could have a material and adverse effect on our business and results of operations.

***We have substantial indebtedness and may incur substantial additional indebtedness in the future, which could adversely affect our financial health and our ability to generate sufficient cash to satisfy our outstanding and future debt obligations.***

We have substantial indebtedness and may incur substantial additional indebtedness in the future, which could adversely affect our financial health and our ability to generate sufficient cash to satisfy our outstanding and future debt obligations. Our substantial indebtedness could have important consequences to us and our shareholders. For example, it could:

limit our ability to satisfy our debt obligations;

increase our vulnerability to adverse general economic and industry conditions;

require us to dedicate a substantial portion of our cash flow from operations to servicing and repaying our indebtedness, thereby reducing the availability of our cash flow to fund working capital, capital expenditures and for other general corporate purposes;



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limit our flexibility in planning for or reacting to changes in our businesses and the industry in which we operate;

place us at a competitive disadvantage compared with our competitors that have less debt;

limit, along with the financial and other restrictive covenants of our indebtedness, among other things, our ability to borrow additional funds; and

increase the cost of additional financing.

In the future, we may from time to time incur substantial additional indebtedness and contingent liabilities. If we incur additional debt, the risks that we face as a result of our already substantial indebtedness and leverage could intensify.

Our ability to generate sufficient cash to satisfy our outstanding and future debt obligations will depend upon our future operating performance, which will be affected by prevailing economic conditions and financial, business and other factors, many of which are beyond our control. We cannot assure you that we will be able to generate sufficient cash flow from operations to support the repayment of our current indebtedness. If we are unable to service our indebtedness, we will be forced to adopt an alternative strategy that may include actions such as reducing or delaying capital expenditures, selling assets, restructuring or refinancing our indebtedness or seeking equity capital. These strategies may not be instituted on satisfactory terms, if at all. In addition, certain of our financing arrangements impose operating and financial restrictions on our business, which may negatively affect our ability to react to changes in market conditions, take advantage of business opportunities we believe to be desirable, obtain future financing, fund required capital expenditures, or withstand a continuing or future downturn in our business. Any of these factors could materially and adversely affect our ability to satisfy our debt obligations.

***We must comply with certain financial and other covenants under the terms of our debt instruments and the failure to do so may put us in default under those instruments.***

Many of our loan agreements include financial covenants and broad default provisions. The financial covenants primarily include current ratios, quick ratios, debt to asset ratios, contingent liability ratios and minimum equity requirements, which, in general, govern our existing long-term debt and debt we may incur in the future. These covenants could limit our ability to plan for or react to market conditions or to meet our capital needs in a timely manner and complying with these covenants may require us to curtail some of our operations and growth plans. In addition, any global or regional economic deterioration may cause us to incur significant net losses or force us to assume considerable liabilities, which would adversely impact our ability to comply with the financial and other covenants of our outstanding loans. If our creditors refuse to grant waivers for any non-compliance with these covenants, such non-compliance will constitute an event of default which may accelerate the amounts due under the applicable loan agreements. Some of our loan agreements also contain cross-default clauses, which could enable creditors under our debt instruments to declare an event of default should there be an event of default on our other loan agreements. We cannot assure you that we will be able to remain in compliance with these covenants in the future. We may not be able to cure future violations or obtain waivers of non-compliance on a timely basis. An event of default under any agreement governing our existing or future debt, if not cured by us or waived by our creditors, could have a material adverse effect on our liquidity, financial condition and results of operations.

***Our dependence on Chinese banks to extend our existing loans and provide additional loans exposes us to funding risks, which may materially and adversely affect our operations.***

We require significant cash flow and funding to support our operations. As a result, we rely on short-term borrowings to provide working capital for our daily operations. Since the majority of our

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short-term borrowings come from Chinese banks, we are exposed to lending policy changes by the Chinese banks. As of December 31, 2018, we had outstanding short-term borrowings of \$550.7 million with Chinese banks.

If the Chinese government changes its macroeconomic policies and forces Chinese banks to tighten their lending practices, or if Chinese banks are no longer willing to provide financing to solar power companies, including us, we may not be able to extend our short-term borrowings or make additional borrowings in the future. As a result, we may not be able to fund our operations to the same extent as in previous years, which may have a material and adverse effect on our operations.

***Cancellations of customer orders may make us unable to recoup any prepayments made to suppliers.***

In the past, we were required to make prepayments to certain suppliers, primarily suppliers of machinery, silicon raw materials, solar ingots, wafers and cells. Although we require certain customers to make partial prepayments, there is generally a lag between the due date for the prepayment of purchased machinery, silicon raw materials, solar ingots, wafers and cells and the time that our customers make prepayments. In the event that our customers cancel their orders, we may not be able to recoup prepayments made to suppliers, which could adversely influence our financial condition and results of operations.

***Credit terms offered to some of our customers expose us to the credit risks of such customers and may increase our costs and expenses, which could in turn materially and adversely affect our revenues, liquidity and results of operations.***

We offer unsecured short-term or medium-term credit to some of our customers based on their creditworthiness and market conditions. As a result, our claims for payments and sales credits rank as unsecured claims, which expose us to credit risk if our customers become insolvent or bankrupt.

From time to time, we sell our products to high credit risk customers in order to gain early access to emerging or promising markets, increase our market share in existing key markets or because of the prospects of future sales with a rapidly growing customer. There are significant credit risks in doing business with these customers because they are often small, young and high-growth companies with significant unfunded working capital, inadequate balance sheets and credit metrics and limited operating histories. If these customers are not able to obtain satisfactory working capital, maintain adequate cash flow, or obtain construction financing for the projects where our solar products are used, they may be unable to pay for the products for which they have ordered or of which they have taken delivery. Our legal recourse under such circumstances may be limited if the customer's financial resources are already constrained or if we wish to continue to do business with that customer. Revenue recognition for this type of customer is deferred until cash is received. If more customers to whom we extend credit are unable to pay for our products, our revenues, liquidity and results of operations could be materially and adversely affected.

***Our dependence on a limited number of suppliers of silicon wafers, cells and silicon, and the limited number of suppliers for certain other components, such as silver metallization paste, solar module back-sheet, and ethylene vinyl acetate encapsulant, could prevent us from delivering our products to our customers in the required quantities or in a timely manner, which could result in order cancellations and decreased revenues.***

We purchase silicon raw materials, silicon wafers and solar cells, from a limited number of third-party material suppliers. In 2018, we purchased a significant portion of the silicon wafers used in our solar modules from third parties. Our major silicon wafer suppliers in 2018 included GCL and Zhenjiang Rende New Energy Science Technology Co., Ltd., or ZJ Rende. Our major suppliers of solar cells in 2018 included Inventec Corporation, or Inventec, and Zhejiang Fortune Energy Co., Ltd. These suppliers may not always be able to meet our quantity requirements, or keep pace with the price

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reductions or quality improvements, necessary for us to price our products competitively. Supply may also be interrupted by accidents, disasters or other unforeseen events beyond our control. The failure of a supplier, for whatever reason, to supply silicon wafers, solar cells, silicon raw materials or other essential components that meet our quality, quantity and cost requirements in a timely manner could impair our ability to manufacture our products or increase our costs. The impact could be more severe if we are unable to access alternative sources on a timely basis or on commercially reasonable terms, and could prevent us from delivering our products to our customers in the required quantities and at prices that are profitable. Problems of this kind could cause order cancellations, reduce our market share, harm our reputation and cause legal disputes with our customers.

***We are developing and commercializing higher conversion efficiency cells, but we may not be able to mass-produce these cells in a cost-effective way, if at all.***

Higher efficiency cell structures are becoming an increasingly important factor in cost competitiveness and brand recognition in the solar power industry. Such cells may yield higher power outputs at the same cost to produce as lower efficiency cells, thereby lowering the manufactured cost per watt. The ability to manufacture and sell solar modules made from such cells may be an important competitive advantage because solar system owners can obtain a higher yield of electricity from the modules that have a similar infrastructure, footprint and system cost compared to systems with modules using lower efficiency cells. Higher conversion efficiency solar cells and the resulting higher output solar modules are one of the considerations in maintaining a price premium over thin-film products. However, while we are making the necessary investments to develop higher conversion efficiency solar power products, there is no assurance that we will be able to commercialize some or any of these products in a cost-effective way, or at all. In the near term, such products may command a modest premium. In the longer term, if our competitors are able to manufacture such products and we cannot do the same at all or in a cost-effective way, we will be at a competitive disadvantage, which will likely influence our product pricing and our financial performance.

***We may be subject to unexpected warranty expense that may not be adequately covered by our insurance policies.***

We warrant, for a period of ten years, that our solar products will be free from defects in materials and workmanship.

We also warrant that, for a period of 25 years, our standard solar modules will maintain the following performance levels:

during the first year, the actual power output of the module will be no less than 97% of the labeled power output;

from the second year to the 24th year, the actual annual power output decline of the module will be no more than 0.7%; and

by the end of the 25th year, the actual power output of the module will be no less than 80% of the labeled power output.

In recent years, we have lengthened this warranty against decline in performance to 30 years for our Dymond module and bifacial module products.

We believe that our warranty periods are consistent with industry practice. Due to the long warranty period, we bear the risk of extensive warranty claims long after we have shipped our products and recognized revenue. We began selling specialty solar products in 2002 and began selling standard solar modules in 2004. Any increase in the defect rate of our products would require us to increase our warranty reserves and would have a corresponding negative impact on our results of operations. Although we conduct quality testing and inspection of our solar module products, our solar module

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products have not been and cannot be tested in an environment simulating the up-to-30-year warranty periods. In particular, unknown issues may surface after extended use. These issues could potentially affect our market reputation and adversely affect our revenues, giving rise to potential warranty claims by our customers. As a result, we may be subject to unexpected warranty costs and associated harm to our financial results as long as 30 years after the sale of our products.

For solar power projects built by us, we also provide a limited workmanship or balance of system warranty against defects in engineering, design, installation and construction under normal use, operation and service conditions for a period of up to five years following the energizing of the solar power plant. In resolving claims under the workmanship or balance of system warranty, we have the option of remedying through repair, refurbishment or replacement of equipment. We have also entered into similar workmanship warranties with our suppliers to back up our warranties.

As part of our energy business, before commissioning solar power projects, we conduct performance testing to confirm that the projects meet the operational and capacity expectations set forth in the agreements. In limited cases, we also provide for an energy generation performance test designed to demonstrate that the actual energy generation for up to the first three years meets or exceeds the modeled energy expectation (after adjusting for actual solar irradiation). In the event that the energy generation performance test performs below expectations, the appropriate party (EPC contractor or equipment provider) may incur liquidated damages capped at a percentage of the contract price.

We have entered into agreements with a group of insurance companies with high credit ratings to back up our warranties. Under the terms of the insurance policies, which are designed to match the terms of our solar module product warranty policy, the insurance companies are obliged to reimburse us, subject to certain maximum claim limits and certain deductibles, for the actual product warranty costs that we incur under the terms of our solar module product warranty policy. We record the insurance premiums initially as prepaid expenses and amortize them over the respective policy period of one year. However, potential warranty claims may exceed the scope or amount of coverage under this insurance and, if they do, they could materially and adversely affect our business.

***We may not continue to be successful in developing and maintaining a cost-effective solar cell, wafer and ingot manufacturing capability.***

Our annual solar cell, solar wafer and ingot production capacity was 6.3 GW, 5.0 GW and 1.65 GW, respectively, as of December 31, 2018. To remain competitive going forward, we intend to expand our annual solar cell, wafer and ingot production capacity to meet expected growth in demand for our solar modules. However, we only have limited and recent operating experience in these areas and may face significant product development challenges. Manufacturing solar cells, wafers and ingots is a complex process and we may not be able to produce a sufficient quality of these items to meet our solar module manufacturing standards. Minor deviations in the manufacturing process can cause substantial decreases in yield and in some cases result in no yield or cause production to be suspended. We will need to make capital expenditures to purchase manufacturing equipment for solar cell, wafer and ingot production and will also need to make significant investments in research and development to keep pace with technological advances in solar power technology. Any failure to successfully develop and maintain cost-effective manufacturing capability may have a material and adverse effect on our business and prospects. For example, we have in the past purchased a large percentage of solar cells from third parties. This negatively affected our margins compared with those of our competitors since it is less expensive to produce cells internally than to purchase them from third parties. Because third party solar cell purchases are usually made in a period of high demand, prices tend to be higher and availability reduced.

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Although we intend to continue direct purchasing of solar cells, wafers and ingots and toll manufacturing arrangements through a limited number of strategic partners, our relationships with our suppliers may be disrupted if we engage in the large-scale production of solar cells, wafers and ingots ourselves. If our suppliers discontinue or reduce the supply of solar cells, wafers and ingots to us, through direct sales or through toll manufacturing arrangements, and we are not able to compensate for the loss or reduction by manufacturing our own solar cells, wafers and ingots, our business and results of operations may be adversely affected.

***We may not achieve acceptable yields and product performance as a result of manufacturing problems.***

We need to continuously enhance and modify our solar module, cell, wafer and ingot production capabilities in order to improve yields and product performance. Microscopic impurities such as dust and other contaminants, difficulties in the manufacturing process, disruptions in the supply of utilities or defects in the key materials and tools used to manufacture solar modules, cells, ingots and wafers can cause a percentage of the solar modules, cells, ingots and wafers to be rejected, which would negatively affect our yields. We may experience manufacturing difficulties that cause production delays and lower than expected yields.

Problems in our facilities, including but not limited to production failures, human errors, weather conditions, equipment malfunction or process contamination, may limit our ability to manufacture products, which could seriously harm our operations. We are also susceptible to floods, tornados, droughts, power losses and similar events beyond our control that would affect our facilities. A disruption in any step of the manufacturing process will require us to repeat each step and recycle the silicon debris, which would adversely affect our yields and manufacturing cost.

***If we are unable to attract, train and retain technical personnel, our business may be materially and adversely affected.***

Our future success depends, to a significant extent, on our ability to attract, train and retain technical personnel. Recruiting and retaining qualified technical personnel, particularly those with expertise in the solar power industry, are vital to our success. There is substantial competition for qualified technical personnel, and there can be no assurance that we will be able to attract or retain sufficient qualified technical personnel. If we are unable to attract and retain qualified employees, our business may be materially and adversely affected.

***Our dependence on a limited number of customers and our lack of long-term customer contracts in our solar modules business may cause significant fluctuations or declines in our revenues.***

We sell a substantial portion of our solar module products to a limited number of customers, including distributors, system integrators, project developers and installers/EPC companies. Our top five customers by revenues collectively accounted for approximately 16.9%, 27.7% and 31.9% of our net revenues in 2016, 2017 and 2018, respectively. We anticipate that our dependence on a limited number of customers will continue for the foreseeable future. Consequently, any of the following events may cause material fluctuations or declines in our revenues:

reduced, delayed or cancelled orders from one or more of our significant customers;

the loss of one or more of our significant customers;

a significant customer's failure to pay for our products on time; and

a significant customer's financial difficulties or insolvency.

As we continue to expand our business and operations, our top customers continue to change. We cannot assure that we will be able to develop a consistent customer base.

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***There are a limited number of purchasers of utility scale quantities of electricity and entities that have the ability to interconnect projects to the grid, which exposes us and our utility scale solar power projects to additional risk.***

Since the transmission and distribution of electricity is either monopolized or highly concentrated in most jurisdictions, there are a limited number of possible purchasers for utility-scale quantities of electricity in a given geographic location, normally transmission grid operators, state and investor owned power companies, public utility districts and cooperatives. As a result, there is a concentrated pool of potential buyers for electricity generated by our solar power plants, which may restrict our ability to negotiate favorable terms under new PPAs and could impact our ability to find new customers for the electricity generated by our solar power plants should this become necessary. Additionally, these possible purchasers may have a role in connecting our projects to the grid to allow the flow of electricity. Furthermore, if the financial condition of these utilities and/or power purchasers deteriorates, or government policies or regulations to which they are subject and which compel them to source renewable energy supplies change, demand for electricity produced by our plants or the ability to connect to the grid could be negatively impacted. For example, Pacific Gas and Electric Company, or PG&E, a California-based utility and customer that has entered into interconnection agreements, or IAs, and PPAs with us, recently filed for bankruptcy protection. The IAs require PG&E to, among other things, reimburse us for certain network upgrade costs advanced by us during the development of our solar power plants and the PPAs require PG&E to, among other things, pay for certain of the electricity generated by our solar power plants. Depending on a variety of factors, including future decisions of PG&E and the bankruptcy court, PG&E may not meet, or may be delayed in meeting, its obligations to us under the IAs and PPAs, which could result in a decrease or delay in our revenues. Any decision by PG&E to meet, or fail to meet, its obligations may also be subject to applicable regulatory requirements, including those of the Federal Energy Regulatory Commission. In addition, provisions in our PPAs or applicable laws may provide for the curtailment of delivery of electricity for various reasons, including preventing damage to transmission systems, system emergencies, force majeure or economic reasons. Such curtailment could reduce revenues to us from our PPAs. If we cannot enter into PPAs on terms favorable to us, or at all, or if the purchaser under our PPAs were to exercise its curtailment or other rights to reduce purchases or payments under the PPAs, our revenues and our decisions regarding development of additional projects in the energy segment may be adversely affected.

***Product liability claims against us could result in adverse publicity and potentially significant monetary damages.***

We, along with other solar power product manufacturers, are exposed to risks associated with product liability claims if the use of our solar power products results in injury or death. Since our products generate electricity, it is possible that users could be injured or killed by our products due to product malfunctions, defects, improper installation or other causes. Although we carry limited product liability insurance, we may not have adequate resources to satisfy a judgment if a successful claim is brought against us. The successful assertion of product liability claims against us could result in potentially significant monetary damages and require us to make significant payments. Even if the product liability claims against us are determined in our favor, we may suffer significant damage to our reputation.

***Our founder, Dr. Shawn Qu, has substantial influence over our company and his interests may not be aligned with the interests of our other shareholders.***

As of March 31, 2019, Dr. Shawn Qu, our founder, Chairman, President and Chief Executive Officer, beneficially owned 13,887,085 common shares, or 23.4% of our outstanding shares. As a result, Dr. Qu has substantial influence over our business, including decisions regarding mergers and

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acquisition, consolidations, the sale of all or substantially all of our assets, the election of directors and other significant corporate actions. This concentration of ownership may discourage, delay or prevent a change in control of our company, which could deprive our other shareholders of an opportunity to receive a premium for their shares as part of a sale of our company and might reduce the price of our common shares.

***We may be exposed to infringement, misappropriation or other claims by third parties, which, if determined adversely to us, could require us to pay significant damage awards.***

Our success depends on our ability to develop and use our technology and know-how and sell our solar power products and services without infringing the intellectual property or other rights of third parties. The validity and scope of claims relating to solar power technology patents involve complex scientific, legal and factual questions and analyses and are therefore highly uncertain. We may be subject to litigation involving claims of patent infringement or the violation of intellectual property rights of third parties. Defending 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. Additionally, we use both imported and China-made equipment in our production lines, sometimes without sufficient supplier guarantees that our use of such equipment does not infringe third-party intellectual property rights. This creates a potential source of litigation or infringement claims. 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 or require us to seek licenses from third parties, pay ongoing royalties, redesign our products or subject us to injunctions prohibiting the manufacture and sale of our products or the use of our technologies. Protracted litigation could also defer customers or potential customers or limit their purchase or use of our products until such litigation is resolved.

***Compliance with environmental laws and regulations can be expensive, and noncompliance with these regulations may result in adverse publicity and potentially significant monetary damages, fines and the suspension or even termination of our business operations.***

We are required to comply with all national and local environmental regulations. Our business generates noise, wastewater, gaseous wastes and other industrial waste in our operations and the risk of incidents with a potential environmental impact has increased as our business has expanded. We believe that we substantially comply with all relevant environmental laws and regulations and have all necessary and material environmental permits to conduct our business as it is presently conducted. However, if more stringent regulations are adopted in the future, the costs of complying with these new regulations could be substantial. If we fail to comply with present or future environmental regulations, we may be required to pay substantial fines, suspend production or cease operations.

Our solar power products must comply with the environmental regulations of the jurisdictions in which they are installed, and we may incur expenses to design and manufacture our products to comply with such regulations. If compliance is unduly expensive or unduly difficult, we may lose market share and our financial results may be adversely affected. Any failure by us to control our use or to restrict adequately the discharge, of hazardous substances could subject us to potentially significant monetary damages, fines or suspensions of our business operations.

***We may not be successful in establishing our brand name in important markets and the products we sell under our brand name may compete with the products we manufacture on an original equipment manufacturer, or OEM, basis for our customers.***

We sell our products primarily under our own brand name but also on an OEM basis. In certain markets, our brand may not be as prominent as other more established solar power product vendors, and there can be no assurance that the brand names "Canadian Solar," or "CSI" or any of our possible

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future brand names will gain acceptance among customers. Moreover, because the range of products that we sell under our own brands and those we manufacture for our OEM customers may be substantially similar, we may end up directly or indirectly competing with our OEM customers, which could negatively affect our relationship with them.

***Failure to protect our intellectual property rights in connection with new solar power products may undermine our competitive position.***

As we develop and bring to market new solar power products, we may need to increase our expenditures to protect our intellectual property. Our failure to protect our intellectual property rights may undermine our competitive position. As of March 31, 2019, we had 1,205 patents and 538 patent applications pending in the PRC for products that contribute a relatively small percentage of our net revenues. We have seven U.S. patents, including one design patent, and five European patents, including four design patents. We have registered the "Canadian Solar" trademark in the U.S., Australia, Canada, Europe, South Korea, Japan, the United Arab Emirates, Hong Kong, Singapore, India, Argentina, Brazil, Peru and more than 20 other countries and we have applied for registration of the "Canadian Solar" trademark in a number of other countries. As of March 31, 2019, we had 69 registered trademarks and 21 trademark applications pending in the PRC, and 96 registered trademarks and 11 trademark applications pending outside of China. These intellectual property rights afford only limited protection and the actions we take to protect our rights as we develop new solar power products may not be adequate. Policing the unauthorized use of proprietary technology can be difficult and expensive. In addition, litigation, which can be costly and divert management attention, 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 have limited insurance coverage and may incur significant losses resulting from operating hazards, product liability claims or business interruptions.***

Our operations involve the use, handling, generation, processing, storage, transportation and disposal of hazardous materials, which may result in fires, explosions, spills and other unexpected or dangerous accidents causing personal injuries or death, property damages, environmental damages and business interruption. Although we currently carry third-party liability insurance against property damage, the policies for this insurance are limited in scope and may not cover all claims relating to personal injury, property or environmental damage arising from incidents on our properties or relating to our operations. See "Item 4. Information on the Company B. Business Overview Insurance." Any occurrence of these or other incidents which are not insured under our existing insurance policies could have a material adverse effect on our business, financial condition or results of operations.

We are also exposed to risks associated with product liability claims in the event that the use of our solar power products results in injury. See "Product liability claims against us could result in adverse publicity and potentially significant monetary damages." Although we carry limited product liability insurance, we may not have adequate resources to satisfy a judgment if a successful claim is brought against us.

In addition, the normal operation of our manufacturing facilities may be interrupted by accidents caused by operating hazards, power supply disruptions, equipment failure, as well as natural disasters. While our manufacturing plants in China and elsewhere are covered by business interruption insurance, any significant damage or interruption to these plants could still have a material and adverse effect on our results of operations.



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***If our internal control over financial reporting or disclosure controls and procedures are not effective, investors may lose confidence in our reported financial information, which could lead to a decline in our share price.***

We are subject to the reporting obligations under U.S. securities laws. The U. S. Securities and Exchange Commission, or SEC, as required by Section 404 of the Sarbanes-Oxley Act of 2002, has adopted rules requiring every public company to include a management report on its internal control over financial reporting in its annual report, which contains management's assessment of the effectiveness of its internal control over financial reporting. In addition, an independent registered public accounting firm must report on the effectiveness of our internal controls over financial reporting. As of December 31, 2018, our management concluded that our internal control over financial reporting was effective. However, we cannot assure you that material weaknesses in our internal controls over financial reporting will not be identified in the future. Any material weaknesses in our internal controls could cause us not to meet our periodic reporting obligations in a timely manner or result in material misstatements in our financial statements. Material weaknesses in our internal controls over financial reporting could also cause investors to lose confidence in our reported financial information, leading to a decline in the market price of our common shares.

***The audit report included in our annual report on Form 20-F was prepared by auditors who are not inspected by the Public Company Accounting Oversight Board and, as a result, you are deprived of the benefits of such inspection.***

The independent registered public accounting firm that issues the audit reports included in our annual reports filed with the SEC, as auditors of companies that are traded publicly in the U.S. and a firm registered with the Public Company Accounting Oversight Board (United States), or the PCAOB, is required by the laws of the U.S. to undergo regular inspections by the PCAOB to assess its compliance with the laws of the U.S. and professional standards. Because we have substantial operations within the PRC and the PCAOB is currently unable to conduct inspections of the work of our independent registered public accounting firm as it relates to those operations without the approval of the Chinese authorities, our independent registered public accounting firm is not currently inspected fully by the PCAOB. This lack of PCAOB inspections in the PRC prevents the PCAOB from regularly evaluating our independent registered public accounting firm's audits and its quality control procedures. As a result, investors may be deprived of the benefits of PCAOB inspections.

On May 24, 2013, PCAOB announced that it had entered into a Memorandum of Understanding on Enforcement Cooperation with the China Securities Regulatory Commission, or the CSRC, and the Ministry of Finance which establishes a cooperative framework between the parties for the production and exchange of audit documents relevant to investigations in the United States and China. On inspection, it appears that the PCAOB continues to be in discussions with the Mainland China regulators CSRC and the Ministry of Finance to permit joint inspections in the PRC of audit firms that are registered with PCAOB in relation to the audit of and audit Chinese companies that trade on U.S. exchanges. On December 7, 2018, the SEC and the PCAOB issued a joint statement highlighting continued challenges faced by the U.S. regulators in their oversight of financial statement audits of U.S.-listed companies with significant operations in China. The joint statement reflects a heightened interest in this issue. However, it remains unclear what further actions the SEC and PCAOB will take and its impact on Chinese companies listed in the U.S..

Inspections of other firms that the PCAOB has conducted outside the PRC have identified deficiencies in those firms' audit procedures and quality control procedures, which may be addressed as part of the inspection process to improve future audit quality. The inability of the PCAOB to conduct full inspections of auditors in the PRC makes it more difficult to evaluate the effectiveness of our independent registered public accounting firm's audit procedures or quality control procedures as compared to auditors outside the PRC that are subject to PCAOB inspections. Investors may lose

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confidence in our reported financial information and procedures and the quality of our financial statements.

***If additional remedial measures are imposed on the big four PRC-based accounting firms, including our independent registered public accounting firm, in administrative proceedings brought by the SEC alleging the firms' failure to meet specific criteria set by the SEC, with respect to requests for the production of documents, we could be unable to timely file future financial statements in compliance with the requirements of the Exchange Act.***

In late 2012, the SEC commenced administrative proceedings under Rule 102(e) of its Rules of Practice and also under the Sarbanes-Oxley Act of 2002 against the mainland Chinese affiliates of the "Big Four" accounting firms (including the mainland Chinese affiliate of our independent registered public accounting firm). A first instance trial of the proceedings in July 2013 in the SEC's internal administrative court resulted in an adverse judgment against the firms. The administrative law judge proposed penalties on the Chinese accounting firms including a temporary suspension of their right to practice before the SEC, although that proposed penalty did not take effect pending review by the Commissioners of the SEC. On February 6, 2015, before a review by the Commissioner had taken place, the Chinese accounting firms reached a settlement with the SEC whereby the proceedings were stayed. Under the settlement, the SEC accepted that future requests by the SEC for the production of documents would normally be made to the CSRC. The Chinese accounting firms would receive requests matching those under Section 106 of the Sarbanes-Oxley Act of 2002, and would be required to abide by a detailed set of procedures with respect to such requests, which in substance would require them to facilitate production via the CSRC. The CSRC for its part initiated a procedure whereby, under its supervision and subject to its approval, requested classes of documents held by the accounting firms could be sanitized of problematic and sensitive content so as to render them capable of being made available by the CSRC to US regulators.

Under the terms of the settlement, the underlying proceeding against the four PRC-based accounting firms was deemed dismissed with prejudice at the end of four years starting from the settlement date, which was on February 6, 2019. Despite the final ending of the proceedings, the presumption is that all parties will continue to apply the same procedures: i.e. the SEC will continue to make its requests for the production of documents to the CSRC, and the CSRC will normally process those requests applying the sanitisation procedure. We cannot predict whether, in cases where the CSRC does not authorize production of requested documents to the SEC, the SEC will further challenge the four PRC-based accounting firms' compliance with U.S. law. If additional challenges are imposed on the Chinese affiliates of the "big four" accounting firms, we could be unable to timely file future financial statements in compliance with the requirements of the Exchange Act.

In the event that the SEC restarts administrative proceedings, depending upon the final outcome, listed companies in the U.S. with major PRC operations may find it difficult or impossible to retain auditors in respect of their operations in the PRC, which could result in their financial statements being determined to not be in compliance with the requirements of the Securities Exchange Act of 1934, as amended, or the Exchange Act, including possible delisting. Moreover, any negative news about any such future proceedings against the firms may cause investor uncertainty regarding China-based, U.S.-listed companies and the market price of their shares may be adversely affected.

If our independent registered public accounting firm was denied, even temporarily, the ability to practice before the SEC and we were unable to timely find another registered public accounting firm to audit and issue an opinion on our financial statements, our financial statements could be determined not to be in compliance with the requirements of the Exchange Act. Such a determination could ultimately lead to the delisting of our common shares from Nasdaq, or deregistration from the SEC, or both, which would substantially reduce or effectively terminate the trading of our common shares in the U.S.

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**Risks Related to Doing Business in China**

***The enforcement of the labor contract law and increases in labor costs in the PRC may adversely affect our business and our profitability.***

The Labor Contract Law came into effect on January 1, 2008, and was later revised on December 28, 2012; the Implementation Rules and the amendment thereunder became effective on September 18, 2008 and July 1, 2013, respectively. The Labor Contract Law and the Implementation Rules imposed stringent requirements on employers with regard to executing written employment contracts, hiring temporary employees, dismissing employees, consultation with the labor union and employee assembly, compensation upon termination and overtime work, collective bargaining and labor dispatch business. In addition, under the Regulations on Paid Annual Leave for Employees, which came into effect on January 1, 2008, and their Implementation Measures, which were promulgated and became effective on September 18, 2008, employees who have served for more than one year with an employer are entitled to a paid vacation ranging from five to 15 days, depending on their length of service. Employees who waive such vacation time at the request of the employer must be compensated for each vacation day waived at a rate equal to three times their normal daily salary. According to the Interim Provisions on Labor Dispatching, which came into effect on March 1, 2014, the number of dispatched workers used by an employer shall not exceed 10% of its total number of workers. Our labor costs are expected to continue to increase due to these new laws and regulations. Higher labor costs and labor disputes with our employees stemming from these new rules and regulations could adversely affect our business, financial condition, and results of operations.

***The increase or decrease in tax benefits from local tax bureau could affect our total PRC taxes payments, which could have a material and adverse impact on our financial condition and results of operations.***

The Enterprise Income Tax Law, or the EIT Law, came into effect in China on January 1, 2008 and was amended on February 24, 2017 and December 29, 2018. Under the EIT Law, both foreign-invested enterprises and domestic enterprises are subject to a uniform enterprise income tax rate of 25%. The EIT Law provides for preferential tax treatment for certain categories of industries and projects that are strongly supported and encouraged by the state. For example, enterprises qualified as a "High and New Technology Enterprise," or HNTE, are entitled to a 15% enterprise income tax rate provided that they satisfy other applicable statutory requirements.

Certain of our PRC subsidiaries, such as CSI New Energy Holding Co., Ltd., or CSI New Energy Holding, Canadian Solar Manufacturing (Luoyang) Inc., or CSI Luoyang Manufacturing, were once HNTEs and enjoyed preferential enterprise income tax rates. These benefits have, however, expired. In 2018, only Suzhou Sanysolar Materials Technology Co., Ltd., or Suzhou Sanysolar, CSI Cells Co., Ltd., or CSI Cells, Canadian Solar Manufacturing (Changshu) Inc., or CSI Changshu Manufacturing, Changshu Tegu New Material Technology Co., Ltd., or Changshu Tegu, Suzhou Gaochuangte New Energy Development Co., Ltd., or Suzhou Gaochuangte, and Changshu Tian Co., Ltd., or Changshu Tian, were HNTEs and enjoyed preferential enterprise income tax rates.

***There are significant uncertainties regarding our tax liabilities with respect to our income under the EIT Law.***

We are a Canadian company with a significant portion of our manufacturing operations in China. Under the EIT Law and its implementation regulations, enterprises established outside China whose "de facto management body" is located in China are considered PRC tax residents and will generally be subject to the uniform 25% enterprise income tax rate on their global income. Under the implementation regulations, the term "de facto management body" is defined as substantial and overall management and control over aspects such as the production and business, personnel, accounts and properties of an enterprise. The Circular on Identification of China-controlled Overseas-registered Enterprises as Resident Enterprises on the Basis of Actual Management Organization, or Circular 82,

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further provides certain specific criteria for determining whether the "de facto management body" of a PRC-controlled offshore incorporated enterprise is located in the PRC. The criteria include whether (a) the premises where the senior management and the senior management bodies responsible for the routine production and business management of the enterprise perform their functions are mainly located within the PRC, (b) decisions relating to the enterprise's financial and human resource matters are made or subject to approval by organizations or personnel in the PRC, (c) the enterprise's primary assets, accounting books and records, company seals, and board and shareholders' meeting minutes are located or maintained in the PRC and (d) 50% or more of voting board members or senior executives of the enterprise habitually reside in the PRC. Although Circular 82 only applies to offshore enterprises controlled by enterprises or enterprise groups located within the PRC, the determining criteria set forth in the Circular 82 may reflect the tax authorities' general position on how the "de facto management body" test may be applied in determining the tax resident status of offshore enterprises. As the tax resident status of an enterprise is subject to the determination by the PRC tax authorities, uncertainties remain with respect to the interpretation of the term "de facto management body" as applicable to our offshore entities. As a substantial number of the members of our management team are located in China, we may be considered as a PRC tax resident under the EIT Law and, therefore, subject to the uniform 25% enterprise income tax rate on our global income, but dividends received by us from our PRC subsidiaries may be exempt from the income tax. If our global income is subject to PRC enterprise income tax at the rate of 25%, our financial condition and results of operation may be materially and adversely affected.

***Dividends paid by us to our non-PRC shareholders and gains on the sale of our common shares by our non-PRC shareholders may be subject to PRC enterprise income tax liabilities or individual income tax liabilities.***

Under the EIT Law and its implementation regulations, dividends paid to a non-PRC investor are generally subject to a 10% PRC withholding tax, if such dividends are derived from sources within China and the non-PRC investor is considered to be a non-resident enterprise without any establishment or place within China or if the dividends paid have no connection with the non-PRC investor's establishment or place within China, unless such tax is eliminated or reduced under an applicable tax treaty. Similarly, any gain realized on the transfer of shares by such investor is also subject to a 10% PRC withholding tax if such gain is regarded as income derived from sources within China, unless such tax is eliminated or reduced under an applicable tax treaty.

The implementation regulations of the EIT Law provide that (a) if the enterprise that distributes dividends is domiciled in the PRC, or (b) if gains are realized from transferring equity interests of enterprises domiciled in the PRC, then such dividends or capital gains shall be treated as China-sourced income.

Currently there are no detailed rules applicable to us that govern the procedures and specific criteria for determining the meaning of being "domiciled" in the PRC. As a result, it is not clear how the concept of domicile will be interpreted under the EIT Law. Domicile may be interpreted as the jurisdiction where the enterprise is incorporated or where the enterprise is a tax resident. As a result, if we are considered a PRC "resident enterprise" for tax purposes, it is possible that the dividends we pay with respect to our common shares to non-PRC enterprises, or the gain non-PRC enterprises may realize from the transfer of our common shares or our convertible notes, would be treated as income derived from sources within China and be subject to the PRC withholding tax at a rate of 10% or a lower applicable treaty rate for enterprises.

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Under the Law of the People's Republic of China on Individual Income Tax, or the IIT Law, individual income tax is payable on PRC-source dividend income. The implementation regulations of the IIT Law provide that income from dividends derived from companies, enterprises and other economic organizations in China as well as income realized from transfer of properties in China is considered derived from sources inside China, regardless of whether the place of payment was inside China. Therefore, if we are treated as a company in China for tax purposes, any dividends we pay to our non-PRC individual shareholders as well as any gains realized by our non-PRC individual shareholders or our non-PRC individual note holders from the transfer of our common shares or our convertible notes may be regarded as China-sourced income and, consequently, be subject to PRC withholding tax at a rate of up to 20% or a lower applicable treaty rate for individuals. The investment returns of our non-PRC investors may be materially and adversely affected if any dividends we pay, or any gains realized on a transfer of our common shares, are subject to PRC tax.

***Restrictions on currency exchange may limit our ability to receive and use our revenues effectively.***

Certain of our revenues and expenses are denominated in Renminbi. If our revenues denominated in Renminbi increase or our expenses denominated in Renminbi decrease in the future, we may need to convert a portion of our revenues into other currencies to meet our foreign currency obligations. Under China's existing foreign exchange regulations, our PRC subsidiaries are able to pay dividends in foreign currencies without prior approval from the State Administration of Foreign Exchange, or SAFE, by complying with certain procedural requirements. However, we cannot assure you that the PRC government will not take further measures in the future to restrict access to foreign currencies for current account transactions.

Foreign exchange transactions by our PRC subsidiaries under most capital accounts continue to be subject to significant foreign exchange controls and require the approval of or registration with PRC governmental authorities. In particular, if we finance our PRC subsidiaries by means of additional capital contributions, the approval of or the record-filing with, certain government authorities, including the Ministry of Commerce or its local counterparts, is required. These limitations could affect the ability of our PRC subsidiaries to obtain foreign exchange through equity financing.

***Uncertainties with respect to the Chinese legal system could materially and adversely affect us.***

We conduct a significant portion of our manufacturing operations through our subsidiaries in China. These subsidiaries are generally subject to laws and regulations applicable to foreign investment in China and, in particular, laws applicable to wholly foreign-owned enterprises and joint venture companies. The PRC legal system is based on written statutes. Prior court decisions may be cited for reference but have limited precedential value. Since 1979, PRC legislation and regulations have significantly enhanced the protections afforded to various forms of foreign investments in China. However, since these laws and regulations are relatively new and the PRC legal system is still developing, the implementation and enforcement of many laws, regulations and rules may be inconsistent, which may limit legal protections available to us. In addition, any litigation in China may be protracted and may result in substantial costs and divert our resources and the attention of our management.

**Risks Related to Our Common Shares**

***We may issue additional common shares, other equity or equity-linked or debt securities, which may materially and adversely affect the price of our common shares.***

We may issue additional equity, equity-linked or debt securities for a number of reasons, including to finance our operations and business strategy (including in connection with acquisitions, strategic collaborations or other transactions), to satisfy our obligations for the repayment of existing

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indebtedness, to adjust our ratio of debt to equity, to satisfy our obligations upon the exercise of outstanding warrants or options or for other reasons. Any future issuances of equity securities or equity-linked securities could substantially dilute the interests of our existing shareholders and may materially and adversely affect the price of our common shares. We cannot predict the timing or size of any future issuances or sales of equity, equity-linked or debt securities, or the effect, if any, that such issuances or sales, may have on the market price of our common shares. Market conditions could require us to accept less favorable terms for the issuance of our securities in the future.

***The market price for our common shares may be volatile.***

The market price for our common shares has been highly volatile and subject to wide fluctuations. During the period from November 9, 2006, the first day on which our common shares were listed on Nasdaq, until December 31, 2017, the market price of our common shares ranged from \$1.95 to \$51.8 per share. From January 1, 2018 to December 31, 2018, the market price of our common shares ranged from \$11.37 to \$17.97 per share. The closing market price of our common shares on December 31, 2018 was \$14.34 per share. The market price of our common shares may continue to be volatile and subject to wide fluctuations in response to a wide variety of factors, including the following:

- announcements of technological or competitive developments;
- regulatory developments in our target markets affecting us, our customers or our competitors;
- actual, projected or anticipated fluctuations in our quarterly operating results;
- changes in financial estimates by securities research analysts;
- changes in the economic performance or market valuations of other solar power companies;
- the departure of executive officers and key research personnel;
- patent litigation and other intellectual property disputes;
- litigation and other disputes with our long-term suppliers;
- fluctuations in the exchange rates between the U.S. dollar, Euro, Japanese yen, British pound, Canadian dollar and Renminbi;
- the release or expiration of lock-up or other transfer restrictions on our outstanding common shares; and
- sales or anticipated sales of additional common shares;

In addition, the securities market has from time to time experienced significant price and volume fluctuations that are not related to the operating performance of particular companies. These market fluctuations may also have a material and adverse effect on the price of our common shares.

***Substantial future sales of our common shares in the public market, or the perception that such sales could occur, could cause the price of our common shares to decline.***

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Sales of our common shares in the public market, or the perception that such sales could occur, could cause the market price of our common shares to decline. As of December 31, 2018, we had 59,180,624 common shares outstanding. The number of common shares outstanding and available for sale will increase when our employees and former employees who are holders of restricted share units and options to acquire our common shares become entitled to the underlying shares under the terms of their units or options. In addition, in connection with debt financing, we have issued warrants and may issue additional warrants to purchase our common shares. To the extent these warrants are exercised and the common shares sold into the market, the market price of our common shares could decline.

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Your right to participate in any future rights offerings may be limited, which may cause dilution to your holdings.

We may from time to time distribute rights to our shareholders, including rights to acquire our securities. However, we cannot make these rights available in the U.S. unless we register the rights and the securities to which the rights relate under the Securities Act of 1933, or the Securities Act, or an exemption from the registration requirements is available. We are under no obligation to file a registration statement with respect to any such rights or securities or to endeavor to cause a registration statement to be declared effective. Moreover, we may not be able to establish an exemption from registration under the Securities Act. Accordingly, you may be unable to participate in our rights offerings and may experience dilution in your holdings.

*Our articles of continuance contain anti-takeover provisions that could adversely affect the rights of holders of our common shares.*

The following provisions in our amended articles of continuance may deprive our shareholders of the opportunity to sell their shares at a premium over the prevailing market price by delaying or preventing a change of control of our company:

Our board of directors has the authority, without approval from the shareholders, to issue an unlimited number of preferred shares in one or more series. Our board of directors may establish the number of shares to be included in each such series and may fix the designations, preferences, powers and other rights of the shares of a series of preferred shares.

Our board of directors is entitled to fix and may change the number of directors within the minimum and maximum number of directors provided for in our articles. Our board of directors may appoint one or more additional directors to hold office for a term expiring no later than the close of the next annual meeting of shareholders, subject to the limitation that the total number of directors so appointed may not exceed one-third of the number of directors elected at the previous annual meeting of shareholders.

*You may have difficulty enforcing judgments obtained against us.*

We are a corporation organized under the laws of Canada and a substantial portion of our assets are located outside of the U.S. A substantial portion of our current business operations is conducted in the PRC. In addition, a majority of our directors and officers are nationals and residents of countries other than the U.S. and a substantial portion of the assets of these persons are located outside the U.S. As a result, it may be difficult for you to effect service of process within the U.S. upon these persons. It may also be difficult for you to enforce judgments obtained in U.S. courts based on the civil liability provisions of the U.S. federal securities laws against us and our officers and directors. In addition, there is uncertainty as to whether the courts of Canada or the PRC would recognize or enforce judgments of U.S. courts against us or such persons predicated upon the civil liability provisions of the securities laws of the U.S. or any state. In addition, it is uncertain whether such Canadian or PRC courts would be competent to hear original actions brought in Canada or the PRC against us or such persons predicated upon the securities laws of the U.S. or any state.

*If a United States person is treated as owning at least 10% of our shares, such person may be subject to adverse United States federal income tax consequences.*

If a United States person is treated as owning (directly, indirectly or constructively) at least 10% of the value or voting power of our shares, such person may be treated as a "United States shareholder" with respect to each "controlled foreign corporation," or CFC, in our group. Where our group includes one or more United States subsidiaries, in certain circumstances we could be treated as a CFC and certain of our non-United States subsidiaries could be treated as CFCs (regardless of whether we are



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or are not treated as a CFC). We believe we and certain of our non-United States subsidiaries may be treated as CFCs for our taxable year ended December 31, 2018.

A United States shareholder of a CFC may be required to annually report and include in its United States taxable income its pro rata share of "Subpart F income," "global intangible low-taxed income" and investments in United States property by CFCs, whether or not we make any distributions. An individual that is a United States shareholder with respect to a CFC generally would not be allowed certain tax deductions or foreign tax credits that would be allowed to a United States shareholder that is a United States corporation. A failure to comply with these reporting obligations may subject a United States shareholder to significant monetary penalties and may prevent starting of the statute of limitations with respect to such shareholder's United States federal income tax return for the year for which reporting was due. We do not intend to monitor whether we or any of our non-United States subsidiaries are treated as CFCs or whether any investor is treated as a United States shareholder with respect to us or any of our CFC subsidiaries or to furnish to any United States shareholders information that may be necessary to comply with the aforementioned reporting and tax paying obligations. A United States investor should consult its own advisor regarding the potential application of these rules in its particular circumstances.

***We may be classified as a passive foreign investment company, which could result in adverse United States federal income tax consequences to United States Holders of our common shares.***

Based on the current value of our assets and the composition of our income and assets, we do not believe we were a passive foreign investment company, or PFIC, for United States federal income tax purposes for our taxable year ended December 31, 2018. However, because our PFIC status for 2019 or any future taxable year may depend, in part, on the manner in which we operate our renewable energy generation assets, we cannot assure you that we will not be a PFIC for our current taxable year ending December 31, 2019 or any future taxable year. A non-United States corporation such as ourselves will be treated as a PFIC for United States federal income tax purposes for any taxable year if, applying applicable look-through rules, either (a) at least 75% of its gross income for such year is passive income or (b) at least 50% of the value of its assets (determined based on an average of the quarterly values of the assets) during such year is attributable to assets that produce or are held for the production of passive income. There are exceptions for income derived in the conduct of certain active businesses, including for income earned from commodities transactions. There is authority to suggest that income earned from our electricity generation business may qualify under the active business exception, but this authority is unclear. PFIC status is based on an annual determination that cannot be made until the close of a taxable year, involves extensive factual investigation, including ascertaining the fair market value of all of our assets on a quarterly basis and the character of each item of income that we earn, and is subject to uncertainty in several respects. In particular, the application of the PFIC rules to certain of our business lines is complex and unclear, and we cannot guarantee that the United States Internal Revenue Service, or IRS, will agree with any positions that we ultimately take. Accordingly, we cannot assure you that we will not be treated as a PFIC for any taxable year or that the IRS will not take a contrary position.

Changes in the composition of our income or composition of our assets may cause us to be more likely to be a PFIC. The determination of whether we are a PFIC for any taxable year may depend in part upon the value of our goodwill and other unbooked intangibles not reflected on our balance sheet (which may depend upon the market value of our common shares from time to time, which may be volatile) and also may be affected by how, and how quickly, we spend our liquid assets. Among other matters, if our market capitalization declines, we may be more likely to be a PFIC because our liquid assets and cash (which are for this purpose considered assets that produce passive income) may then represent a greater percentage of our overall assets. Further, while we believe our classification methodology and valuation approach is reasonable, it is possible that the IRS may challenge our

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methodology or valuation of our goodwill and other unbooked intangibles, which may result in our being or becoming a PFIC for the current or a future taxable year.

If we are a PFIC for any taxable year during which a United States Holder (as defined in "Item 10. Additional Information E. Taxation United States Federal Income Taxation") holds a common share, certain adverse United States federal income tax consequences could apply to such United States Holder. See "Item 10. Additional Information E. Taxation United States Federal Income Taxation Passive Foreign Investment Company."

**ITEM 4. INFORMATION ON THE COMPANY**

**A. History and Development of the Company**

Our legal and commercial name is Canadian Solar Inc. We were incorporated under the laws of the Province of Ontario, Canada in October 2001. We changed our jurisdiction by continuing under the Canadian federal corporate statute, the Canada Business Corporations Act, or CBCA, effective June 1, 2006. As a result, we are governed by the CBCA. See " C. Organizational Structure" for additional information on our corporate structure, including a list of our major subsidiaries.

Our principal executive office and principal place of business is located at 545 Speedvale Avenue West, Guelph, Ontario, Canada N1K 1E6. Our telephone number at this address is (1-519) 837-1881 and our fax number is (1-519) 837-2550. Our agent for service of process in the United States is CT Corporation System, located at 111 Eighth Avenue, New York, New York 10011.

All inquiries to us should be directed at the address and telephone number of our principal executive office set forth above. Our website is [www.canadiansolar.com](http://www.canadiansolar.com). The information contained on or accessible through our website does not form part of this annual report.

We made capital expenditures of \$1,111.5 million, \$310.7 million and \$316.3 million in 2016, 2017 and 2018, respectively. Our capital expenditures were primarily to maintain and increase our ingot, wafer, cell and module manufacturing capacity and to develop and construct solar power systems. For more details, see "Item 5. Operating and Financial Review and Prospects B. Liquidity and Capital Resources Capital Expenditures."

***Proposed Going-Private Transaction***

Our board of directors received a preliminary non-binding proposal letter dated December 9, 2017 from Dr. Qu, our chairman, president and chief executive officer, to acquire all of our outstanding common shares not owned by Dr. Qu and his wife, in a going private transaction for \$18.47 in cash per common share, or Proposed Transaction.

On December 12, 2017, our board of directors formed a special committee of independent and disinterested directors, consisting of four independent directors, Messrs. Robert McDermott, Lars-Eric Johansson, Harry Ruda and Andrew Wong, to consider the Proposed Transaction, with the aid of Barclays Capital Canada Inc. as its independent financial advisor, Weil, Gotshal & Manges LLP as its U.S. legal counsel and Osler, Hoskin & Harcourt LLP as its Canadian legal counsel.

On November 5, 2018, the special committee recommend to our board that the special committee be dissolved and that our board cease its review of the Proposed Transaction and not undertake a review of any future "going private" transaction proposed by Dr. Qu unless the board receives reasonable evidence that the future transaction is fully financed.

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**B. Business Overview**

*Overview*

We are one of the world's largest solar power companies and a leading vertically-integrated provider of solar power products, services and system solutions with operations in North America, South America, Europe, Africa, the Middle East, Australia and Asia.

We design, develop and manufacture solar ingots, wafers, cells, modules and other solar power products. Our solar power products include standard solar modules and specialty solar products. We are incorporated in Canada and conduct most of our manufacturing operations in China and south-east Asia. Our products include a range of solar modules built to general specifications for use in a wide range of residential, commercial and industrial solar power generation systems. Specialty solar products consist of customized solar modules that our customers incorporate into their own products and complete specialty products, such as portable solar home systems. We sell our products primarily under our "Canadian Solar" brand name.

In recent years, we have increased our investment in, and management attention on, our energy segment. Our energy segment primarily comprises solar power project development and sale, operating solar power projects and sales of electricity. Our energy segment contributed 3.8%, 20.0% and 42.1% of our net revenues in 2016, 2017 and 2018, respectively. While we plan to continue to monetize our current portfolio of solar power projects in operation, we also intend to grow our energy segment by building up our project pipeline and increasing the EPC services which we provide to customers. In March 2015, we acquired Recurrent Energy, LLC, or Recurrent, a leading solar energy developer with solar power projects located principally in California and Texas, and thereby significantly increased our solar project pipeline. As of February 28, 2019, our late-stage solar project pipeline, which refers to projects that have FITs or PPAs and which are expected to be built within the next two to four years, totaled approximately 2.9 gigawatt peak, or GWp, with 1,210 megawatt peak, or MWp, in the U.S., 476.2 MWp in Brazil, 368 MWp in Mexico, 295.1 MWp in Japan, 100 MWp in China and additional 450.1 MWp in Australia, Argentina, Canada, Taiwan, the Philippines, India, Malaysia, Italy and South Korea. In addition to our late-stage solar project pipeline, as of February 28, 2019, we had a portfolio of solar power projects in operation totaling 986.3 MWp with an estimated resale value of approximately \$1.2 billion. For those projects that are subject to U.S. tax equity deals, only the value of the class B shares held by us was included in such estimate of resale value. See " Sales, Marketing and Customers Energy Segment Solar Project Development and Sale" and " Sales, Marketing and Customers Energy Segment Operating Solar Power Projects and Sales of Electricity" for a description of the status of our solar power projects in operation.

We believe that we offer one of the broadest crystalline silicon solar power product lines in the industry. Our product lines range from modules of medium power output to high efficiency, high-power output multi-crystalline and mono-crystalline modules, as well as a range of specialty products. We currently sell our products to a diverse customer base in various markets worldwide, including China, Japan, the U.S., Germany, Brazil, Netherlands, Australia, U.A.E, Canada, India and the United Kingdom. Our customers are primarily distributors, system integrators, project developers and installers/EPC companies.

We employ a flexible vertically integrated business model that combines internal manufacturing capacity with direct material purchases of both cells and wafers. We believe this approach has benefited us by lowering the cost of materials of our solar module products. We also believe that this approach provides us with greater flexibility to respond to short-term demand increases.

As of December 31, 2018, we had:

8.88 GW of total annual solar module manufacturing capacity, approximately 1.35 MW of which is located in South East Asia, 50MW in Brazil and the rest in China;

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6.3 GW of total annual solar cell manufacturing capacity, approximately 1.3 GW of which is located in South East Asia and the rest in China;

5.0 GW of total annual wafer manufacturing capacity located in China; and

1.65 GW of total annual ingot manufacturing capacity located in China.

We plan to expand our module and cell manufacturing capacities to 11.2 GW and 9.3 GW, respectively, by December 31, 2019.

We intend to use substantially all of the silicon wafers that we manufacture to supply our own solar cell plants and to use substantially all of the solar cells that we manufacture to produce our own solar module products. We also intend to use some of the solar modules we produce in our energy segment. Our solar module manufacturing costs in China, including purchased polysilicon, wafers and cells, decreased from \$0.33 per watt in December 2016, to \$0.32 per watt in December 2017 and to \$0.20 per watt in December 2018. We expect to continue to decrease the manufacturing costs for our production of wafers, cells and modules.

We continue to focus on reducing our manufacturing costs by improving solar cell conversion efficiency, enhancing manufacturing yields and reducing raw material costs. In January 2009, we established a new solar cell efficiency research center to develop more efficient cell structures, and we have been making ongoing improvements in solar cell conversion efficiency and product cost control. We began shipping new products, such as higher efficiency modules, in late 2011. We have successfully developed and launched additional new high-efficiency cells and modules in the past few years and expect to increase the sales volumes of these products in the future.

***Our Products and Services***

Our business consists of the following two business segments: MSS segment and energy segment. Our MSS segment primarily involves the design, development, manufacturing and sale of a wide range of solar power products, including standard solar modules, specialty solar products and solar system kits. The MSS segment also provides EPC and O&M services. Our energy segment primarily consists of solar power project development and sale, operating solar power projects and sales of electricity.

*Products Offered in Our MSS Segment*

*Standard Solar Modules*

Our standard solar modules are arrays of interconnected solar cells in weatherproof encapsulation. We produce a wide variety of standard solar modules, ranging from 3W to over 410W in power and using multi-crystalline or mono-crystalline cells in several different design patterns, including shingled cells. Our mainstream solar modules include standard CS6K(60 full cells), CS6U(72 full cells), CS3K(120 half-cells), CS3U(144 half-cells), Dymond CS6X-P-FG(72 full cells, double-glass), Dymond CS3U-P-FG(144 half-cells, double-glass), BiKu CS3U-B-FG(144 half-cells, bifacial), HiKu CS3W(144 half-cells), HiDM CS1H(60 format, shingled cells) modules, and HiKu which utilizes the industry's first 166mmx166mm sized multi-crystalline solar wafers and achieves over 400W. The mainstream modules are designed for residential, commercial and utility applications. The small modules are for specialty applications.

We launched our Quartech modules in March 2013. Quartech modules use 4-busbar solar cell technology which improves module reliability and efficiency. CS6P (6 × 10 cell layout) Quartech modules have power output between 255 W and 270 W, which enables us to offer customers modules with high power. We launched and started shipping Dymond modules in October 2014. Dymond modules are designed with double-glass encapsulation, which is more reliable for harsh environments and ready for 1500V solar systems.

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We launched and started shipping SmartDC modules in September 2015. SmartDC modules feature an innovative integration of our module technology and power optimization for grid-tied PV applications. By replacing the traditional junction-box, SmartDC modules eliminate module power mismatch, mitigate shading losses and optimize power output at module-level. SmartDC modules also provide module-level data to minimize operational costs and to permit effective system management.

In March 2016, we launched our new Quintech SuperPower mono-crystalline modules. Quintech SuperPower mono-crystalline modules are made of cells with PERC technology and significantly improve module efficiency and reliability. CS6K (6 × 10 cell layout aligned with mainstream dimensions) Quintech SuperPower mono modules have a power output between 285 W and 300 W with high efficiency and high reliability. We started commercial production of Quintech CS6K and CS6U modules in 2016. These modules have features such as 5 busbar cells, standardized module dimensions and cell and module improvements, resulting in higher wattage production and better performance. These modules are intended for broad base introduction, which covers mono-crystalline cells, multi-crystalline cells and mono-crystalline PERC cells.

At the beginning of 2015, we started commercial production of Onyx cells with our in-house developed black silicon technology, Onyx technology. Onyx technology employs a nano-texturing process to make the multi-crystalline cell almost fully black, increasing cell efficiency and module wattage at the same time. We started increasing the production volume of Onyx cells in 2016, which have been incorporated into our Quaretech and Quintech module families.

In July 2016, we launched the 1500V System Voltage crystalline solar module portfolio. The 1500V System Voltage crystalline module provides a robust and cost-efficient system solution by adding more modules in a string, which decreases the number of combiner boxes, direct current homeruns and trenching. This unique product design improves the overall system performance and efficiency and reduces labor cost and installation time.

In 2017, we launched the Ku module series which results in 100% improvement in failure redundancy with innovative cell matrix interconnection technology. The module power output is enhanced by up to 10 Watt per module while reducing the module working temperature. We developed P4 cell technology, which is multi-crystalline PERC technology. The combination of P4 cell and Ku module technologies enable us to offer customer higher wattage and more reliable multi crystalline module products. We also launched and shipped HDM (High Density Module) product to some markets this year. The HDM offers high wattage, high module efficiency and pleasant aesthetics for residential applications.

In 2018, we launched the BiKu modules which are bifacial designed and can generate additional electricity from the backside of the module. These modules have more shading tolerance and a much lower hot spot risk thanks to the innovative design on the bifacial cell and double glass module. At the end of 2018, we began the mass production of the HiKu module, the first commercially available multi-crystalline module exceeding 400 watts with significant leveraged cost of energy, or LCOE, advantages. In 2018, we launched the HiDM module, which is an upgrade of the HDM module and uses shingled cells to increase both module wattage and efficiency. We also launched P5 technology, which is based on casted mono technology developed in house, and will boost cell and module efficiencies close to mono while retaining all the advantages of multi technology, such as LID, LeTID and lower cost.

Our standard solar modules are designed to endure harsh weather conditions and to be transported and installed easily. We sell our standard solar modules primarily under our brand name.

Specialty Solar Products

Our specialty solar products are mainly solar inverters, energy storage systems, or ESS, Maple solar systems, and solar pump systems.

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Solar inverters are on grid inverters to generate electricity from solar modules. Our inverter products cover 1.5kW to 60kW power levels and are available in 13 regions and countries globally.

ESS works together with rooftop solar power systems to guarantee 24-hour electric power supply. Our 5kW CAMEL, an all-in-one energy storage system, is designed with compactly integrated appearance, and supports 5.7 kWh LFP, or lithium iron phosphate, batteries with long life time. Our 3kW/5kW CAMEL Split energy storage system comprises a separate hybrid inverter and compatible LFP batteries. The Split ESS provides more flexible installation.

The Maple solar system is an economical, safe and clean energy solution for families who burn kerosene for lighting. The Maple solar system includes a solar panel, energy-efficient light-emitting diode, or LED, lights, Li-ion batteries and multiple cell phone charger plugs. It can be used as a regular light at home or for camping, as a SOS signal in emergency, and as a mobile power bank for consumer electronics, such as mobile phones or other 5 V DC electronic devices.

The solar pump system is designed to provide convenient water for areas lacking electricity and water. It is mainly constructed with PV modules, a mounting structure, combiner box, inverter, water pump, float switch and water tank. By taking advantage of renewable solar energy, it is environmental-friendly, efficient and economical for various water lifting applications such as irrigation, desertification control, livestock breeding, water diversion and mountain afforestation.

Solar System Kits

A solar system kit is a ready-to-install package consisting of solar modules produced by us and components, such as inverters, racking system and other accessories, supplied by third parties. We began selling solar system kits in 2010 and in 2018 sold them primarily to customers in Japan, Europe and China.

EPC and O&M Services

Our MSS segment started to provide EPC services in 2018. And our MSS segment provided EPC services in Australia market in 2018. Our O&M services include inspections, repair and replacement of plant equipment and site management and administrative support services for solar power projects in operation. We started to provide O&M services in the second half of 2012. In 2018, we provided O&M services primarily in the North American, Europe, Australia and Japan markets.

*Products and Services Offered in Our Energy Segment*

Solar Project Development and Sale

We develop, build and sell solar power projects. Our solar project development activities have grown over the past several years through a combination of organic growth and acquisitions. Our global solar power project business develops projects primarily in Canada, Japan, the U.S., China, Brazil, India, Mexico, the United Kingdom and Australia. We have a team of experts who specialize in project development, evaluations, system designs, engineering, managing, project coordination and organizing financing. Our project sales team actively identifies and pursues suitable buyers for our solar power projects. See " Sales, Marketing and Customers Energy Segment Solar Project Development and Sale" for a description of the status of our solar power projects.

Operating Solar Power Plants and Sales of Electricity

We operate certain of our solar plants and generate income from the sale of electricity. Although most of our solar power projects are developed for sale, we may operate them for a period of time before they are sold. As of February 28, 2019, we had a fleet of solar power plants in operation with an aggregate capacity of approximately 986.3 MWp.

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***Supply Chain Management***

*MSS Segment*

Our MSS segment depends on our ability to obtain a stable and cost-effective supply of polysilicon, solar ingots, wafers and cells. Our silicon wafer agreements set forth price and quantity information, delivery terms and technical specifications. While these agreements usually set forth specific price terms, most of them also include mechanisms to adjust the prices, either upwards or downwards, based on market conditions. Over the years, we have entered into a number of long-term supply agreements with various silicon and wafer suppliers in order to secure a stable supply of raw materials to meet our production requirements. These suppliers included GCL, Deutsche Solar and LDK. In 2009 and thereafter, we amended our agreements with certain of these suppliers to adjust the purchase price to prevailing market prices at the time we place a purchase order and to reduce the quantity of products that we are required to purchase. Under our supply agreements with certain suppliers, and consistent with historical industry practice, we make advance payments prior to scheduled delivery dates. These advance payments are made without collateral and are credited against the purchase prices payable by us. In 2018, we purchased a significant portion of the silicon wafers used in our solar modules from third parties. Our largest silicon wafer supplier was GCL, and we have recently extended our silicon wafer purchase contract with GCL through 2019. Since 2011, the supply of polysilicon and silicon wafers has generally exceeded demand. This is particularly true for polysilicon. Polysilicon prices decreased from approximately \$20.6 per kilogram at December 31, 2014 to \$13.7 per kilogram at December 31, 2015; increased starting in the third quarter of 2016, reaching approximately \$19.7 per kilogram by December 31, 2017, but decreased significantly to \$9.0 per kilogram by December 31, 2018. We plan to continue to diversify our external wafer and polysilicon suppliers.

We purchase solar cells from a number of international and local suppliers, in addition to manufacturing our own solar cells and having toll manufacturing arrangements with our solar cell suppliers. Our solar cell agreements set forth price and quantity information, delivery terms and technical specifications. These agreements generally provide for a period of time during which we can inspect the product and request the seller to make replacements for damaged goods. We generally require the seller to bear the costs and risks of transporting solar cells until they have been delivered to the location specified in the agreement. In 2018, our largest supplier of solar cells was Inventec. As we expand our business, we expect to increase our solar cell manufacturing capacity and diversify our solar cell supply channel to ensure we have the flexibility to adapt to future changes in the supply of, and demand for, solar cells.

For risks relating to the long-term agreements with our raw material suppliers, see "Item 3. Key Information D. Risk Factors Risks Related to Our Company and Our Industry Long-term supply agreements may make it difficult for us to adjust our raw material costs should prices decrease. Also, if we terminate any of these agreements, we may not be able to recover all or any part of the advance payments we have made to these suppliers and we may be subject to litigation."

*Energy Segment*

Our MSS segment supplies part of the solar modules used in our energy segment. For the solar power projects that we develop, we have the option of either using our own engineering and operation teams or hiring third-party contractors to build and operate the projects prior to sale.

***Manufacturing, Construction and Operation***

*MSS Segment*

We assemble our solar modules by interconnecting multiple solar cells by tabbing and stringing them into a desired electrical configuration. We lay the interconnected cells, laminate them in a

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vacuum, cure them by heating and package them in a protective lightweight anodized aluminum frame. We seal and weatherproof our solar modules to withstand high levels of ultraviolet radiation, moisture and extreme temperatures.

We selectively use automated equipment to enhance the quality and consistency of our finished products and to improve the efficiency of our manufacturing processes. Key equipment in our manufacturing process includes automatic laminators, simulators and solar cell testers. The design of our assembly lines provides flexibility to adjust the ratio of automated equipment to skilled labor in order to maximize quality and efficiency.

*Energy Segment*

We develop, construct, maintain, sell and/or operate solar power projects primarily in Canada, Japan, the U.S., China, Brazil, India, Mexico, the United Kingdom and Australia. We engage in all aspects of the development and operation of solar power projects, including project selection, design, permitting, engineering, procurement, construction, installation, monitoring, operation and maintenance. We also provide EPC services to third-parties.

Our solar power projects development process primarily consists of the following stages:

*Market due diligence and project selection.* We search for project opportunities globally with the goal of maintaining a robust and geographically diversified project portfolio. Our business team closely monitors the global solar power projects market and gathers market intelligence to identify project development opportunities. Our development team prepares market analysis reports, financial models and feasibility studies to guide us in evaluating and selecting solar power projects. As we consider undertaking new solar power projects, we weigh a number of factors including location, local policies and regulatory environment, financing costs and potential internal rate of returns.

*Project financing.* We typically include project financing plans in our financial models and feasibility studies. We finance our projects through our working capital and debt financing from local banks or international financing sources that require us to pledge project assets.

*Permitting and approval.* We either obtain the permits and approvals necessary for solar projects ourselves or we acquire projects that have already received the necessary permits and approvals. The permitting and approval process for solar power projects varies from country to country and often from region to region within a country.

*Project design, engineering, procurement and construction.* Our engineering team generally designs solar power projects to optimize performance while minimizing construction and operational costs and risks. The engineering design process includes the site layout and electrical design as well choosing the appropriate technology, in particular module and inverter types. We use solar modules produced by us and by third-party manufacturers, and procure inverters and other equipment from third-party suppliers. In China, we generally construct solar projects through Gaochuangte, our affiliate in which we owned a 40% equity interest before June 30, 2017 and an 80% owned subsidiary since July 1, 2017.

Currently, we operate and maintain solar power plants primarily in the U. S., China, Japan, India and Mexico. We enter into grid-connection agreements and/or PPAs with the local grid companies. After a project is connected to the grid, we regularly inspect, monitor and manage the project site with the intention to maximize the utilization rate, rate of power generation and system life of the project.

We operate a monitoring center in Guelph, Ontario, Canada, which adopts the global monitoring platform (CSEye) to manage system alarms and reports. Our proprietary algorithms analyze the



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performance of the third party power plants that we operate and maintain on a daily basis and identify potential problems. For example, they raise alarms when inverters or strings are under-performing.

**Quality Control and Certifications**

We have registered our quality control system according to the requirements of ISO 9001:2008 and ISO/TS 16949 standards. TÜV Rheinland Group, a leading international service company that documents the safety and quality of products, systems and services, audits our quality systems. We inspect and test incoming raw materials to ensure their quality. We monitor our manufacturing processes to ensure quality control and we inspect finished products by conducting reliability and other tests.

We also maintain various international and domestic certifications for our solar modules. For example, we have obtained the International Electrotechnical Commission, or IEC, certifications for sales of our modules in Europe, Underwriters Laboratories, or UL, certifications for sales of our modules in North America, and other necessary certifications for sales of our modules in Japan, South Korea and Great Britain and under several solar programs in China, including Golden Sun. The IEC certification is issued by Verband Deutscher Elektrotechniker, or VDE, and the UL certification by Canadian Standards Association, or CSA. All of our modules launched since the beginning of 2017 satisfy the latest standards, including IEC 61215, IEC61730 and UL 1703, and have achieved high California Energy Commission, or CEC, PVUSA test condition ratings. All have passed salt mist testing, ammonia testing and PID testing. They have also obtained the certification under the certification schemes of various countries, such as the Microgeneration Certification Scheme of the United Kingdom, the National Institute of Metrology, Standardization and Industrial Quality of Brazil, the Clean Energy Council of Australia, and the China General Certification Center of China.

Our PV test laboratory is accredited by CNAS according to ISO 17025 quality management standard, and has been approved into various Data Acceptance Program by the CSA, the VDE, Intertek Satellite Lab in the U.S. and the China Quality Certification Center, or CQC, in China. The PV test laboratory allows us to conduct some product certification testing in-house, which decreases time-to-market and certification costs.

**Sales, Marketing and Customers**

The following table sets forth, for the periods indicated, certain information relating to our total net revenues derived from our customers categorized by their geographic locations for the periods indicated:

Region	Years Ended December 31,					
	2016		2017		2018	
	Total Net Revenues	%	Total Net Revenues	%	Total Net Revenues	%
(In thousands of \$, except for percentages)						
Asia	1,338,404	46.9	1,926,091	56.8	1,571,287	42.0
Americas	1,103,509	38.7	1,108,162	32.7	1,474,657	39.4
Europe and others	411,165	14.4	356,140	10.5	698,568	18.6
<b>Total</b>	<b>2,853,078</b>	<b>100.0</b>	<b>3,390,393</b>	<b>100.0</b>	<b>3,744,512</b>	<b>100.0</b>

**MSS Segment**

Our primary customers are distributors, system integrators, project developers and installers/EPC companies. A small number of customers have historically accounted for a significant portion of our net revenues. In 2016, 2017 and 2018, the top five customers of the MSS segment by net revenues

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collectively accounted for approximately 16.7%, 18.0% and 9.1%, respectively, of our total net revenues. Sales to our largest customer in those years accounted for 5.0%, 7.2% and 2.6%, respectively, of our total net revenues.

We market and sell solar modules worldwide for residential, commercial and utility-scale solar energy projects and solutions. We primarily sell our products to distributors and large-scale installers through our own, home-grown sales teams, who operate throughout Europe, the Americas, the Middle East and the Asia-Pacific regions.

Our marketing activities include brand sponsorship, social media discussions and digital marketing. Our teams also develop channel marketing programs to support our customers in their marketing of our business and products, in addition to providing to them various services such as product training, new product briefing, and sales training. Furthermore, our marketing team focuses heavily on public relations and crisis management to safeguard our public image. By working closely with our sales teams and other leading solar research companies, our marketing team provides up-to-date market information on a constant basis, supporting the efforts of our sales team. Our marketing staff is located throughout the Americas, China, Europe, India, Japan, Australia, South Africa and South Korea.

We sell our standard solar module products primarily under three types of arrangements: sales contracts to distributors; sales to systems integrators, installers/EPC companies and project developers; and OEM/tolling manufacturing arrangements.

We target our sales and marketing efforts for our specialty solar products at companies in selected industry sectors, including the automotive, telecommunications and LED lighting sectors. As standard solar modules increasingly become commoditized and technology advancements allow solar power to be used in more off-grid applications, we intend to increase our sales and marketing efforts on our specialty solar products and capabilities. Our sales and marketing team works with our specialty solar products development team to take into account changing customer preferences and demands to ensure that our sales and marketing team is able to effectively communicate to customers our product development changes and innovations. We intend to establish additional relationships in other market sectors as the specialty solar products market expands.

As we expand our manufacturing capacity and enhance our brand name, we continue to develop new customer relationships in a wider range of geographic markets to decrease our market concentration. In 2013, we significantly increased our total number of customers and achieved a leading market share in Canada, Japan, Thailand and Central America, which we maintained in 2014. In 2015, we maintained our leading market share in those markets and at the same time expanded our customer base into several emerging solar markets, such as Southeast Asia. In 2016, we achieved a leading market share in Brazil and maintained our leading market share in Canada, Japan, Thailand and India. In 2017, we maintained our leading market share in India, Japan, Brazil, Europe and Middle East. In 2018, we increased our market share in the Middle East, Africa, Latin America and Australia, and maintained our leading market share in Japan and Europe. We intend to continue to expand our sales in these areas and develop more emerging markets in 2019.

In 2010, we commenced the sale of solar system kits. A solar system kit is a ready-to-install package consisting of solar modules produced by us and components, such as inverters, racking system and other accessories, supplied by third parties. In 2018, we sold approximately 125.4 MW of system kits primarily in Japan, Europe and China.

Since 2012, we have started to provide O&M services for solar power plants in commercial operation. Our O&M services include inspections, repair and replacement of plant equipment, site management and administrative support services.

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*Energy Segment*

We develop, construct, maintain, sell and/or operate solar plants primarily in Canada, Japan, the U.S., China, Brazil, India, Mexico, the United Kingdom and Australia. We provide EPC and development services primarily in Canada, China, Australia, India and the U.S. We sell our projects to large utility companies and other power producers. Customers for our EPC and development services include solar project developers and owners.

In order to continue to grow our energy segment, we conduct market due diligence, routinely meet with industry players and interested investors and attend industry conferences and events to identify project development opportunities. Our energy segment team has extensive industry expertise and significant experience in working with government authorities and developing new projects for our target markets.

*Solar Project Development*

Our late-stage utility-scale solar power project pipeline includes nearly all projects for which we have FITs or PPAs and that are expected to be built within the next two to four years. However, some of our late-stage projects may not be completed due to failure to secure permits or grid connection, among other risks.

As of February 28, 2019, our late-stage utility-scale solar project pipeline totaled approximately 2.9 GWp, including 1,210 MWp in the U.S., 476.2 MWp in Brazil, 368 MWp in Mexico, 295.1 MWp in Japan, 100 MWp in China and additional 450.1 MWp in Australia, Argentina, Canada, Taiwan, the Philippines, India, Malaysia, Italy and South Korea.

In Japan

As of February 28, 2019, our late-stage, utility-scale solar power project pipeline, for which interconnection agreements and FIT have been secured, totaled approximately 295.1 MWp, including 97.7 MWp in construction and 197.4 MWp under development.

In December 2018, the Japan Ministry of Economy Trade and Industry, or METI, finalized rule changes to the FIT program. These rule changes affect 32, 36-and 40-yen projects that are not operational. Our project pipeline of 295.1MWp as of February 28, 2019 reflects the anticipated impact of these rule changes.

The expected COD schedule of our late-stage, utility scale solar power projects in Japan, as of February 28, 2019, was as follows:

<b>Expected COD Schedule (MWp)</b>			
	<b>2020</b>	<b>2021 and Thereafter</b>	<b>Total</b>
<b>2019</b>	67.7	48.9	178.5
			295.1

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#### In the U.S.

Our late-stage, utility-scale solar project pipeline in the U.S. as of February 28, 2019 was as follows:

Project	MWp	Location	Status	Expected COD
Gaskell West 2	147	California	Development	2020
Pflugerville	185	Texas	Development	2020
Texas Project	280	Texas	Development	2020
Texas Project 2	310	Texas	Development	2020
Slate	200	California	Development	2021
Stanford Solar Generating Station #2	88	California	Development	2021
<b>Total</b>	<b>1,210</b>			

#### In China

As of February 28, 2019, our late-stage solar project pipeline in China approximates to 100 MWp.

#### In Brazil

Our late-stage, utility-scale solar project pipeline in Brazil as of February 28, 2019 was as follows:

Project	MWp	Location	Status	Expected COD
Francisco Sa	122.2	Minas Gerais	Development	2021
Jaiba	97.3	Minas Gerais	Development	2021
Lavras	144.7	Ceara	Development	2021
Salgueiro	112	Pernambuco	Development	2020
<b>Total</b>	<b>476.2</b>			

#### In Mexico

Our late-stage, utility-scale solar project pipeline in Mexico as of February 28, 2019 was as follows:

Project	MWp	Location	Status	Expected COD
EL Mayo	124	Sonora	Development	2021
Horus	119	Aguascalientes	Development	2020
Tastiota	125	Sonora	Development	2020
<b>Total</b>	<b>368</b>			

#### Operating Solar Power Plants and Sales of Electricity

In addition to our late-stage, utility-scale solar project pipeline, we had a portfolio of solar power plants in operation totaling 986.3 MWp as of February 28, 2019. Our revenue generated from sale of electricity was \$8.7 million in 2018. The resale value of these plants was estimated at approximately \$1.2 billion as of February 28, 2019. For those plants that are subject to U.S. tax equity deals, only the value of the class B shares held by us was included in the aforementioned estimate of resale value.

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Our total portfolio of solar power plants in operation as of February 28, 2019 was as follows:

Projects in Operation (MWp)						
U.S.	Japan	China	India	Mexico	Others	Total
340.1	89.4	369.6	90.1	68	29.1	986.3

***Customer Support and Service***

We typically sell our standard solar modules with a ten-year warranty against defects in materials and workmanship and a linear power performance warranty that guarantees the actual power output of our modules.

For solar power projects built by us, we provide a limited workmanship or balance of system warranty against defects in engineering, design, installation and construction under normal use, operation and service conditions for a period of up to five years following the energizing of the solar power project. In resolving claims under the workmanship or balance of system warranty, we have the option of remedying through repair, refurbishment or replacement of equipment. We have also entered into similar workmanship warranties with our suppliers to back up our warranties.

As part of our energy business, before commissioning solar power projects, we conduct performance testing to confirm that the projects meet the operational and capacity expectations set forth in the agreements. In limited cases, we also provide for an energy generation performance test designed to demonstrate that the actual energy generation for up to the first three years meets or exceeds the modeled energy expectation (after adjusting for actual solar irradiation). In the event that the energy generation performance test performs below expectations, the appropriate party (EPC contractor or equipment provider) may incur liquidated damages capped at a percentage of the contract price. In certain instances, a bonus payment may be received if the energy generation performance test performs above expectations.

Our customer support and service function handles technical inquiries and warranty-related issues. In recent years, we expanded our capacity in these areas to better enable us to handle our customer's questions and concerns in a timely and professional manner.

In 2018, we renewed our product warranty insurance coverage to provide additional security to our customers. See " Insurance" below. Our customer support and service function will continue to expand and improve services we provide to our customers.

***Competition******MSS Segment***

The market for solar power products is competitive and evolving. We compete with American companies, such as First Solar and SunPower, and China-based companies such as Trina, Jinko, JA Solar and Hanwha Q Cells. Some of our competitors are developing or producing products based on alternative solar technologies, such as thin film PV materials, that may ultimately have costs similar to, or lower than, our projected costs. Solar modules produced using thin film materials, such as cadmium telluride and copper indium gallium selenide technology, generally have lower conversion efficiency but do not use silicon for production, compared to our crystalline silicon solar module products, and as such are less susceptible to increases in the costs of silicon. Some of our competitors have also become vertically integrated, from upstream polysilicon manufacturing to solar system integration. In addition, the solar power market in general competes with other sources of renewable and alternative energy as well as conventional power generation.

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We believe that the key competitive factors in the market for solar power products include:

price;

the ability to deliver products to customers on time and in the required volumes;

product quality and associated service issues;

nameplate power and other performance parameters of the module, such as power tolerances;

value-added services such as system design and installation;

value-added features such as those that make a module easier or cheaper to install;

additional system components such as mounting systems, delivered as a package or bundle;

brand equity and any good reputation resulting from the above items, including the willingness of banks to finance projects using modules produced by a particular supplier;

customer relationships and distribution channels; and

the aesthetic appearance of solar power products.

In the immediate future, we believe that our ability to compete depends on our ability to deliver cost-effective products in a timely manner and to develop and maintain a strong brand name based on high quality products and strong relationships with downstream customers. Our competitiveness also depends on our ability to effectively manage our cash flow and balance sheet and to maintain our relationships with the financial institutions that fund solar power projects. Consolidation of the solar industry is already occurring and is expected to continue in the near future. We believe that such consolidation will benefit our company in the long-term. We believe that the key to competing successfully in the long-term is to produce innovative, high quality products at competitive prices and develop an integrated sales approach that includes services, ancillary products, such as mounting systems and inverters, and value-added product features. We believe that a good marketing program and the strong relationships that we are building with customers and suppliers will support us in this competitive environment.

*Energy Segment*

Our energy segment is a capital-intensive business with numerous industry participants. We face competition from a large and diverse group of local and international project developers, financial investors and certain utility companies. These competitors vary in terms of size, geographic focus, financial resources and operating capabilities and are active in Canada, Japan, the U.S., China, Brazil, India, Mexico, the United Kingdom, Australia and other markets where we operate or intend to enter. We compete in a diversified and complicated landscape since the commercial and regulatory environments for solar power project development, sale and operation vary significantly from region to region and country to country. Our primary competitors are local and international developers and operators of solar power projects. We believe the key competitive factors in the global solar power project development industry include:

vertical integration with upstream manufacturing;

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permit and project development experience and expertise;

reputation and track record;

relationship with government authorities and knowledge of local policies;

strong internal working capital and good relationship with banks and international organizations that enhance access to external financing;

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experienced technicians and executives who are familiar with the industry and the implementation of our business plans; and

expertise and experience in providing EPC.

However, we cannot guarantee that some of our competitors do not or will not have advantages over us in terms of greater operational, financial, technical, management or other resources in particular markets or in general.

Currently, we develop and construct and, in limited cases, operate and maintain solar power projects in various regions including the United Kingdom, the U.S., China, Japan, Brazil, India, Australia and Africa. We compete to supply energy to potential customers with a limited number of utilities and providers of distributed generation in these markets. If we wish to enter into new PPAs for our solar power projects upon termination of previous PPAs, we compete with conventional utilities primarily based on cost of capital, generation located at customer sites, operations and management expertise, price (including predictability of price), green attributes of power, the ease by which customers can switch to electricity generated by our energy systems and our open architecture approach to working within the industry, which facilitates collaboration and project acquisitions.

For further discussion of the competitive risks that we face, see "Item 3. Key Information D. Risk Factors Risks Related to Our Company and Our Industry Because the markets in which we compete are highly competitive and quickly evolving, because many of our competitors have greater resources than we do or are more adaptive, and because we have a limited track record in our energy segment, we may not be able to compete successfully and we may not be able to maintain or increase our market share."

***Insurance***

We maintain property risk insurance policies with reputable insurance companies to cover our equipment, facilities, buildings and inventories. The coverage of these insurance policies includes losses due to natural hazards and losses arising from unforeseen accidents. Our manufacturing plants in China and elsewhere are covered by business interruption insurance. However, significant damage or interruption to any of our manufacturing plants, whether as a result of fire or other causes, could still have a material and adverse effect on our results of operations. We also maintain commercial general liability (including product liability) coverage. We obtained credit insurance from China Export & Credit Insurance Corporation, or Sinasure. Credit insurance is designed to offset the collection risk of our account receivables for certain customers within the credit limits approved by Sinasure. Risks related to marine, air and inland transit for the export of our products and domestic transportation of materials and products are covered under cargo transportation insurance. We also maintain directors and officers liability insurance.

We have agreements with a group of insurance companies to reduce some of the risks associated with our warranties. Under the terms of the insurance policies, the insurance companies are obliged to reimburse us, subject to certain maximum claim limits and certain deductibles, for the actual product warranty costs that we incur under the terms of our warranty against defects in workmanship and material and our warranty relating to power output. The warranty insurance is renewable annually. We believe that our warranty improves the marketability of our products and our customers are willing to pay more for products with warranties backed by insurance.

***Environmental Matters***

Except as disclosed in the "Item 3. Key Information D. Risk Factors Risks Related to Doing Business in China," we believe we have obtained the environmental permits necessary to conduct the business currently carried on by us at our existing manufacturing facilities. We have also conducted



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environmental studies in conjunction with our solar power projects to assess and reduce the environmental impact of such projects.

Our products must comply with the environmental regulations of the jurisdictions in which they are installed. We make efforts to ensure that our products comply with the EU Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH).

Our operations are subject to regulation and periodic monitoring by local environmental protection authorities. If we fail to comply with present or future environmental laws and regulations, we could be subject to fines, suspension of production or cessation of operations.

**Government Regulations**

This section sets forth a summary of certain significant regulations or requirements that affect our business activities in China or our shareholders' right to receive dividends and other distributions from us.

*Renewable Energy Law and Other Government Directives*

In February 2005, China enacted its Renewable Energy Law, which became effective on January 1, 2006 and was revised in December 2009. The revised Renewable Energy Law, which became effective on April 1, 2010, sets forth policies to encourage the development and use of solar energy and other non-fossil energy sources and their on-grid generation. It also authorizes the relevant pricing authorities to set favorable prices for the purchase of electricity generated by solar and other renewable power generation systems.

The law also sets forth the national policy to encourage the installation and use of solar energy water-heating systems, solar energy heating and cooling systems, solar PV systems and other solar energy utilization systems. It also provides financial incentives, such as national funding, preferential loans and tax preferences for the development of renewable energy projects subject to certain regulations of the relevant authorities.

In November 2005, the NDRC promulgated the Renewable Energy Industry Development Guidance Catalogue, in which solar power figured prominently. In January 2006, the NDRC promulgated two implementation directives with respect to the Renewable Energy Law. In January 2007, the NDRC promulgated another related implementation directive. These directives set forth specific measures for setting the price of electricity generated by solar and other renewable power generation systems, for sharing additional expenses, and for allocating administrative and supervisory authority among different government agencies at the national and provincial levels. They also stipulate the responsibilities of electricity grid companies and power generation companies with respect to the implementation of the Renewable Energy Law.

In August 2007, the NDRC promulgated the Medium and Long-Term Development Plan for the Renewable Energy Industry. This plan sets forth national policy to provide financial allowance and preferential tax regulations for the renewable energy industry. The Outline of the Thirteenth Five-Year Plan for National Economic and Social Development of the PRC, which was approved by the National People's Congress in March 2016, the Thirteenth Five-Year Plan for Renewable Energy Development, which was promulgated by the NDRC in December 2016, and the Thirteenth Five-Year Plan for Solar Power Generation, which was promulgated by the National Energy Administration in December 2016 also demonstrates a commitment to promote the development of renewable energy to enhance the competitiveness of the renewable energy industry, including the solar energy industry.

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China's Ministry of Housing and Urban-Rural Development (formerly, the Ministry of Construction) also issued a directive in June 2005 which seeks to expand the use of solar energy in residential and commercial buildings and encourages the increased application of solar energy in different townships. Similarly, China's State Council promulgated a directive in July 2005, which sets forth specific measures to conserve energy resources. In November 2005, China's Ministry of Housing and Urban-Rural Development promulgated the Administrative Provisions on Energy Conservation for Civil Constructions which encourages the development of solar energy. In August 2006, the State Council issued the Decision on Strengthening the Work of Energy Conservation which encourages the great development of the solar energy and other renewable energy. In addition, on April 1, 2008, the PRC Energy Conservation Law came into effect. Among other objectives, this law encourages the installation of solar power facilities in buildings to improve energy efficiency. In July 2009, China's Ministry of Finance and Ministry of Housing and Urban-Rural Development jointly promulgated "the Urban Demonstration Implementation Program of the Renewable Energy Building Construction" and "the Implementation Program of Acceleration in Rural Application of the Renewable Energy Building Construction" to support the development of the new energy industry and the new energy-saving industry.

On March 8, 2011, China's Ministry of Finance and Ministry of Housing and Urban-Rural Development jointly promulgated the Notice on Further Application of Renewable Energy in Building Construction, which aims to raise the percentage of renewable energy used in buildings.

On August 21, 2012, China's Ministry of Finance and Ministry of Housing and Urban-Rural Development jointly promulgated the Notice on Improving Policies for Application of Renewal Energy in Building and Adjusting Fund Allocation and Management Method, which aims to promote the use of solar energy and other new energy products in public facilities and residences, further amplifying the effect of the policies for application of renewable energy in buildings.

In June 2014, the General Office of the State Council issued its Notice on Printing and Distributing the Action Plan for the Energy Development Strategy (2014-2020), which requested accelerating the development of solar power generation, including promoting the construction of photovoltaic base construction, among others.

In April 2015, China's Ministry of Finance promulgated the Interim Measures for Administration of the Special Fund for the Development of Renewable Energy Sources, which stipulated the division of regulation of special fund for the development of renewable energy sources and the main scopes to be supported.

In April 2016, the NDRC and National Energy Administration issued the Notice on Printing and Distributing the Action Plan for Energy Technology Revolution and Innovation (2016-2030), which sets forth the focus, the main direction, the timetable and the route of energy technology innovation.

In November 2017, the NDRC issued the Opinions on Comprehensively Deepening the Reform of the Price Mechanism, which requested improving the price mechanism of renewable energy, including adopting the decrement mechanism on the on-grid benchmark price of new energy resources such as wind power and photovoltaic power.

*Environmental Regulations*

As we have expanded our ingot, silicon wafer and solar cell manufacturing capacities, we have begun to generate material levels of noise, wastewater, gaseous wastes and other industrial waste. Additionally, as we expand our internal solar components production capacity, our risk of facility incidents that would negatively affect the environment also increases. We are subject to a variety of governmental regulations related to the storage, use and disposal of hazardous materials. The major environmental laws and regulations applicable to us include the PRC Environmental Protection Law,

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which became effective in 1989, as amended and promulgated in 2014, the PRC Law on the Prevention and Control of Noise Pollution, which became effective in 1997, as amended and promulgated in 2018, the PRC Law on the Prevention and Control of Air Pollution, which became effective in 1988, as amended and promulgated in 1995, 2000, 2015 and 2018, the PRC Law on the Prevention and Control of Water Pollution, which became effective in 1984, as amended and promulgated in 1996, 2008 and 2017, the PRC Law on the Prevention and Control of Solid Waste Pollution, which became effective in 1996, as amended and promulgated in 2004, 2013, 2015 and 2016, the PRC Law on Evaluation of Environmental Affects, which became effective in 2003, as amended and promulgated in 2016 and 2018, the PRC Law on Promotion of Clean Production, which became effective in 2003, as amended and promulgated in 2012, and the Regulations on the Administration of Construction Project Environmental Protection, which became effective in 1998, as amended and promulgated in 2017.

Some of our PRC subsidiaries are located in Suzhou, China, which is adjacent to Taihu Lake, a nationally renowned and protected body of water. As a result, production at these subsidiaries is subject to the Regulations on the Administration of Taihu Basin, which became effective on 2011, the Regulation of Jiangsu Province on Preventing Water Pollution in Taihu Lake, which became effective in 1996 and was further revised and promulgated in 2007, 2010, 2012 and 2018, and the Implementation Plan of Jiangsu Province on Comprehensive Treatment of Water Environment in Taihu Lake Basin, which was promulgated in February 2009 and amended in 2013. Because of these regulations, the environmental protection requirements imposed on nearby manufacturing projects, especially new projects, have increased noticeably, and Jiangsu Province has stopped approving construction of new manufacturing projects that increase the amount of nitrogen and phosphorus released into Taihu Lake, except for those satisfy certain applicable statutory requirements.

*Admission of Foreign Investment*

The principal regulation governing foreign ownership of solar power businesses in the PRC is the Foreign Investment Industrial Guidance Catalogue. Under the current catalogue, which was amended in June 2017 and became effective on July 28, 2017, the solar power related business is classified as an "encouraged foreign investment industry." Companies that operate in encouraged foreign investment industries and satisfy applicable statutory requirements are eligible for preferential treatment, including exemption from customs of certain self-used equipment and priority consideration in obtaining land use rights provided by certain local governments.

While the 2004 catalogue only applied to the construction and operation of solar power stations, the 2007 catalogue expanded its application also applies to the production of solar cell manufacturing machines, the production of solar powered air conditioning, heating and drying systems and the manufacture of solar cells, and the 2011 catalogue, the 2015 catalogue and the current 2017 catalogue also cover the manufacture of solar light collector glass and etc.

*Administration of Foreign Invested Companies*

The establishment, approval, registered capital requirement and day-to-day operational matters of wholly foreign-owned enterprises, are regulated by the Wholly Foreign-Owned Enterprise Law of the PRC, effective in 1986 and amended in 2000 and 2016, and the Implementation Rules of the Wholly Foreign-owned Enterprise Law of the PRC, effective in 1990 and amended in 2001 and 2014. The establishment, operation and management of corporate entities in China are governed by the Company Law of the PRC, or the Company Law, effective in 1994 and amended in 1999, 2004, 2005, 2013 and 2018. The Company Law is applicable to our PRC subsidiaries unless PRC laws on foreign investment stipulate otherwise.

In March 2019, the Foreign Investment Law was promulgated and will become effective on January 1, 2020, at which time the Wholly Foreign-owned Enterprise Law will be repealed. Foreign-

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invested enterprises that were established in accordance with Wholly Foreign-owned Enterprise Law before the implementation of Foreign Investment Law may retain their original organizational forms and other aspects for five years. Specific implementation measures, which will be formulated by the State Council, have not yet been promulgated.

*Income Tax and VAT*

PRC enterprise income tax is calculated based on taxable income determined under PRC accounting principles. Under the EIT Law, both foreign-invested enterprises and domestic enterprises are subject to a uniform enterprise income tax rate of 25%. The EIT Law provides for preferential tax treatment for certain categories of industries and projects that are strongly supported and encouraged by the state. For example, enterprises qualified as HNTes are entitled to a 15% enterprise income tax rate, provided that they satisfy other applicable statutory requirements.

Certain of our PRC subsidiaries, such as CSI New Energy Holding and CSI Luoyang Manufacturing, were once HNTes and enjoyed preferential enterprise income tax rates. These benefits have, however, expired. In 2018, only Suzhou Sanysolar, CSI Cells, CSI Changshu Manufacturing, Changshu Tegu, Suzhou Gaochuangte and Changshu Tlian were HNTes and enjoyed preferential enterprise income tax rates.

The EIT Law also provides that enterprises established outside China whose "de facto management body" is located in China are considered PRC tax residents and will generally be subject to the uniform 25% enterprise income tax rate on their global income. Under the implementation regulations, the term "de facto management body" is defined as substantial and overall management and control over aspects such as the production and business, personnel, accounts and properties of an enterprise. Circular 82 further provides certain specific criteria for determining whether the "de facto management body" of a PRC-controlled offshore incorporated enterprise is located in the PRC. The criteria include whether (a) the premises where the senior management and the senior management bodies responsible for the routine production and business management of the enterprise perform their functions are mainly located within the PRC, (b) decisions relating to the enterprise's financial and human resource matters are made or subject to approval by organizations or personnel in the PRC, (c) the enterprise's primary assets, accounting books and records, company seals, and board and shareholders' meeting minutes are located or maintained in the PRC and (d) 50% or more of voting board members or senior executives of the enterprise habitually reside in the PRC. Although Circular 82 only applies to offshore enterprises controlled by enterprises or enterprise groups located within the PRC, the determining criteria set forth in the Circular 82 may reflect the tax authorities' general position on how the "de facto management body" test may be applied in determining the tax resident status of offshore enterprises. As the tax resident status of an enterprise is subject to the determination by the PRC tax authorities, uncertainties remain with respect to the interpretation of the term "de facto management body" as applicable to our offshore entities. As a substantial number of the members of our management team are located in China, we may be considered as a PRC tax resident under the EIT Law and, therefore, subject to the uniform 25% enterprise income tax rate on our global income.

Under the EIT Law and implementing regulations issued by the State Council, the PRC withholding tax rate of 10% is generally applicable to interest and dividends payable to investors from companies that are not "resident enterprises" in the PRC, to the extent such interest or dividends have their sources within the PRC. If our Canadian parent entity is deemed a PRC tax resident under the EIT Law based on the location of our "de facto management body," dividends distributed from our PRC subsidiaries to our Canadian parent entity could be exempt from Chinese dividend withholding tax. However, in that case, dividends from us to our shareholders may be regarded as China-sourced income and, consequently, be subject to Chinese withholding tax at the rate of 10%, or at a lower treaty rate if applicable. Similarly, if we are considered a PRC tax resident, any gain realized by our

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shareholders from the transfer of our common shares is also subject to Chinese withholding tax at the rate of 10% if such gain is regarded as income derived from sources within the PRC. It is unclear whether any dividends that we pay on our common shares or any gains that our shareholders may realize from the transfer of our common shares would be treated as income derived from sources within the PRC and subject to PRC tax.

Under the Provisional Regulation of the PRC on Value Added Tax amended in 2008, 2016 and 2017 and its implementation rules, which became effective in 2009 and were amended in 2011, all entities and individuals that are engaged in the sale of goods, processing, repairs and replacement services, the sales of services, intangible assets or real estate, and the importation of goods in China are required to pay VAT. Gross proceeds from sales and importation of goods and sales of labor services are generally subject to VAT at a rate of 17%, with exceptions for certain categories of goods that are taxed at a rate of 11%. Gross proceeds from sales of real estate are subject to VAT at a rate of 11%. Gross proceeds from sales of services and intangible assets are generally subject to VAT at a rate of 6%, with exceptions for certain categories of services or intangible assets that are taxed at a rate of 17% or 11%. When engaging in exportation of certain goods or cross-border sales of certain services or intangible assets, the exporter or the seller is entitled to a refund of a portion or all of the VAT that it has already paid or borne.

In April 2018, Ministry of Finance and State Administration of Taxation jointly announced that as of May 1, 2018, if the VAT taxpayer is subject to VAT taxable sales or imported goods, the original 17% tax rate or the original 11% tax rate shall be adjusted to 16% or 10%, respectively.

In March 2019, Ministry of Finance, State Administration of Taxation and General Administration of Customs jointly announced that as of April 1, 2019, if the VAT general taxpayer is subject to VAT taxable sales or imported goods, the original 16% tax rate shall be adjusted to 13%; if the original 10% tax rate is applied, the tax rate shall be adjusted to 9%.

*Foreign Currency Exchange*

Foreign currency exchange regulation in China is primarily governed by the Foreign Currency Administration Rules, which became effective in 1996 and were amended in 1997 and 2008, and the Settlement, Sale and Payment of Foreign Exchange Administration Rules (1996), or the Settlement Rules.

Currently, the Renminbi is convertible for current account items, including the distribution of dividends, interest payments, trade and service-related foreign exchange transactions. Conversion of the Renminbi for most capital account items, such as security investment and repatriation of investment, however, is still subject to limitation and requires the approval by or registration with SAFE.

However, SAFE began to reform the foreign exchange administration system and issued the Notice on Reforming the Administrative Approach Regarding the Settlement of the Foreign Exchange Capitals of Foreign-invested Enterprises, or Circular 19, on March 30, 2015, which allows foreign invested enterprises to settle their foreign exchange capital on a discretionary basis according to the actual needs of their business operation and allows a foreign-invested enterprise with a business scope including "investment" to use the RMB capital converted from foreign currency registered capital for equity investments within the PRC. On June 9, 2016, SAFE issued the Circular on Reforming and Regulating Policies on the Control over Foreign Exchange Settlement of Capital Accounts, or Circular 16. Compared to Circular 19, Circular 16 provides that discretionary foreign exchange settlement applies to foreign exchange capital, foreign debt offering proceeds and remitted foreign listing proceeds, and the corresponding RMB obtained from foreign exchange settlement are not restricted from extending loans to related parties or repaying the inter-company loans (including advances by third parties).

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On February 13, 2015, SAFE promulgated the Circular on Further Simplifying and Improving the Policies Concerning Foreign Exchange Control on Direct Investment, or SAFE Circular No. 13, which delegates the authority to enforce the foreign exchange registration in connection with the inbound and outbound direct investment under relevant SAFE rules to certain banks and therefore further simplifies the foreign exchange registration procedures for inbound and outbound direct investment.

On January 26, 2017, SAFE promulgated the Circular on Further Improving Reform of Foreign Exchange Administration and Optimizing Genuineness and Compliance Verification, which sets out various measures that relaxes the policy restriction on foreign exchange inflow to further enhance trade and investment facilitation and that tightens genuineness and compliance verification of cross-border transactions and cross-border capital flow.

*Dividend Distribution*

The principal regulations governing distribution of dividends paid by wholly foreign owned enterprises include the Wholly Foreign-Owned Enterprise Law of the PRC, effective in 1986 and amended in 2000 and 2016, the Implementation Rules of the Wholly Foreign-Owned Enterprise Law of the PRC, effective in 1990 and amended in 2001 and 2014, the Company Law effective in 1994 and amended in 1999, 2004, 2005, 2013 and 2018 and the EIT Law and its implementation rules, both effective in 2008.

Under these laws, foreign-invested enterprises in China may pay dividends only out of their accumulated profits, if any, determined in accordance with PRC accounting standards and regulations. In addition, a wholly foreign owned enterprise in China is required to set aside at least 10% of its after-tax profits determined in accordance with PRC accounting standards each year to its general reserves until the accumulative amount of such reserves reach 50% of its registered capital. These reserves are not distributable as cash dividends. The board of directors of a foreign-invested enterprise has the discretion to allocate a portion of its after-tax profits to staff welfare and bonus funds, which may not be distributed to equity owners except in the event of liquidation.

*Employment*

The major laws and regulations governing the employment relationship, including wage and hour requirements, working and safety conditions, social insurance, housing funds and other welfare. The PRC Labor Law which became effective on January 1, 1995 and amended on August 27, 2009, and December 29, 2018, the Labor Contract Law of the People's Republic of China, which became effective on January 1, 2008, and was later revised on December 28, 2012, its Implementing Regulation and the amendment thereunder, which became effective on September 18, 2008 and July 1, 2013, respectively, permit workers in both state-owned and private enterprises in the PRC to bargain collectively. The PRC Labor Law and the PRC Labor Contract Law provide for collective contracts to be developed through collaboration between the labor unions (or worker representatives in the absence of a union) and management that specify such matters as working conditions, wage scales, and hours of work. The PRC Labor Contract Law and its Implementing Regulation impose certain requirements with respect to human resources management, including, among other things, signing labor contracts with employees, terminating labor contracts, paying remuneration and compensation and making social insurance contributions. In addition, the PRC Labor Contract Law requires employers to provide remuneration packages that meet the relevant local minimum standards. The PRC Labor Contract Law has enhanced rights for the nation's workers, including permitting open-ended labor contracts and severance payments. It requires employers to provide written contracts to their workers, restricts the use of temporary labor and makes it harder for employers to lay off employees. It also requires that employees with fixed-term contracts be entitled to an indefinite-term contract after a fixed-term contract is renewed twice or the employee has worked for the employer for a consecutive ten-year period. According to the Interim Provisions on Labor Dispatching, which came into effect on

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January 3, 2014, the number of dispatched workers used by an employer shall not exceed 10% of its total number of workers.

Under applicable PRC laws, rules and regulations, including the Social Insurance Law promulgated by the Standing Committee of the National People's Congress and effective as of July 1, 2011 and amended on December 29, 2018, the Rules on Implementing the Social Insurance Law issued by Ministry of Human Resource and Social Security and effective as of July 1, 2011, the Interim Regulations on the Collection and Payment of Social Security Funds promulgated by the State Council and effective as of January 22, 1999, the Interim Measures Concerning Maternity Insurance promulgated by the Ministry of Labor and effective as of January 1, 1995, the Regulations on Occupational Injury Insurance promulgated by the State Council and effective as of January 1, 2004 and amended on December 20, 2010, and the Regulations on the Administration of Housing Accumulation Funds promulgated by the State Council and effective as of April 3, 1999 and amended on March 24, 2002, employers are required to contribute, on behalf of their employees, to a number of social security funds, including funds for basic pension insurance, unemployment insurance, basic medical insurance, occupational injury insurance, maternity leave insurance, and to housing accumulation funds. These payments are made to local administrative authorities and any employer who fails to contribute may be fined and ordered to remediate on payments within a stipulated time period.

**C. Organizational Structure**

The following table sets out our major subsidiaries, including their place of incorporation and our ownership interest, as of March 31, 2019.

<b>Name of entity</b>	<b>Place of incorporation</b>	<b>Ownership interest</b>
CSI Solartronics (Changshu) Co., Ltd.	PRC	100%
CSI Solar Technologies Inc.	PRC	100%
CSI New Energy Holding Co., Ltd.	PRC	100%
Canadian Solar Manufacturing (Luoyang) Inc.	PRC	100%
Canadian Solar Manufacturing (Changshu) Inc.	PRC	100%
CSI Cells Co., Ltd.	PRC	100%
Canadian Solar (USA) Inc.	USA	100%
Canadian Solar Japan K.K.	Japan	100%
Canadian Solar Solutions Inc.	Canada	100%
CSI Solar Power Group Co., Ltd. (formerly named/known as "CSI Solar Power (China) Inc.")	PRC	100%
Canadian Solar EMEA GmbH	Germany	100%
Canadian Solar (Australia) Pty Limited	Australia	100%
Canadian Solar International Limited	Hong Kong	100%
Canadian Solar O and M (Ontario) Inc.	Canada	100%
Suzhou Sanysolar Materials Technology Co., Ltd.	PRC	99.73%
Canadian Solar South East Asia Pte. Ltd.	Singapore	100%
Canadian Solar South Africa (Pty) Ltd	South Africa	100%
Canadian Solar Brazil Commerce, Import and Export of Solar Panels Ltd.	Brazil	100%
Canadian Solar Construction (USA) LLC	USA	100%
Canadian Solar Projects K.K.	Japan	100%
CSI&GCL Solar Manufacturing (Yan Cheng) Inc.	PRC	80%
Canadian Solar UK Ltd.	United Kingdom	100%
Canadian Solar UK Projects Ltd.	United Kingdom	100%
Changshu Tegu New Material Technology Co., Ltd.	PRC	100%
Changshu Tlian Co., Ltd.	PRC	100%
Recurrent Energy Group Inc.	USA	100%

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Name of entity	Place of incorporation	Ownership interest
Recurrent Energy, LLC	USA	100%
PT. Canadian Solar Indonesia	Indonesia	67%
Canadian Solar Manufacturing Vietnam Co., Ltd.	Vietnam	100%
Canadian Solar Energy Private Limited	India	100%
Canadian Solar MSS (Australia) Pty Ltd (formerly named/known as "Canadian Solar Australia I Pty Ltd.")	Australia	100%
Canadian Solar Energy Holding Company Limited	Hong Kong	100%
Canadian Solar Energy Singapore Pte. Ltd.	Singapore	100%
Canadian Solar Manufacturing (Thailand) Co., Ltd.	Thailand	99.99992%
Canadian Solar Sunenergy (Suzhou) Co., Ltd.	PRC	100%
Canadian Solar Sunenergy (Baotou) Co., Ltd.	PRC	100%
Canadian Solar Middle East DMCC	United Arab Emirates	100%
CSI Investment Management (SuZhou) Co., Ltd.	PRC	100%
Suzhou Gaochuangte New Energy Development Co., Ltd.	PRC	80%
CSI Cells (Yancheng) Co., Ltd.	PRC	*
CSI Modules (Dafeng) Co., Ltd.	PRC	**
Canadian Solar Construction (Australia) Pty Ltd	Australia	100%
CSUK Energy Systems Construction and Generation JSC	Turkey	100%
CSI Modules (JiaXing) Co., Ltd.	PRC	100%
CSI Wafer (LuoYang) Co., Ltd.	PRC	100%
Canadian Solar Manufacturing Taiwan Co., Ltd.	PRC	100%
Canadian Solar Argentina Investment Holding Ltd	Argentina	100%
Changshu Xingu Photovoltaic Material Technology Co., Ltd.	PRC	100%

\*

CSI Cells holds 52% equity rights of CSI Cells (Yancheng) Co., Ltd. A limited partnership fund, of which CSI Cells holds 37.33% shares as a limited partner and a wholly-owned subsidiary of CSI Solar Power Group Co., Ltd. holds 0.17% shares as a general partner, holds 48% equity rights of CSI Cells (Yancheng) Co., Ltd.

\*\*

CSI Changshu Manufacturing holds 3.12% equity rights of CSI Modules (DaFeng) Co., Ltd. A limited partnership fund, of which CSI Changshu Manufacturing holds 20% shares as a limited partner and a wholly-owned subsidiary of CSI Solar Power Group Co., Ltd. holds 0.067% shares as a general partner, holds 96.88% equity rights of CSI Modules (DaFeng) Co., Ltd.

#### **D. Property, Plant and Equipment**

The following is a summary of our material properties, including information on our manufacturing facilities and office buildings as of the date of this annual report on Form 20-F:

CSI Changshu Manufacturing has the land use right to two pieces of land of approximately 40,000 square meters and 180,000 square meters, respectively, in Changshu, on which we have built manufacturing facilities with a total floor area of approximately 164,817 square meters. We have obtained certificates for property ownership for all of CSI Changshu Manufacturing's facilities.

CSI Luoyang Manufacturing has a land use right to a piece of land of approximately 35,345 square meters in Luoyang (Phase I), on which we have constructed manufacturing facilities. The floor area of Phase I is approximately 6,761 square meters. The certificates for property ownership were granted in June 2008. In 2008, CSI Luoyang Manufacturing obtained the land use right to a piece of land adjacent of approximately 79,685 square meters (Phase II), on which we have constructed manufacturing facilities. The floor area of Phase II is approximately 29,811 square meters. The certificates for property ownership were granted in September 2013. In 2016, CSI Luoyang Manufacturing obtained the land use right to a piece of land of 159,961 square meters (Phase III), on which we have constructed manufacturing facilities





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with the floor area of approximately 38,955 square meters. We have obtained the certificates for property ownership for Phase III in March 2018.

CSI Cells has the land use right to a piece of land of approximately 65,661 square meters in Suzhou. We completed the construction of our first solar cell manufacturing facilities on this site in the first quarter of 2007. The Phase I manufacturing facilities have 14,077 square meters, for which we obtained the certificate for property ownership. The Phase II cell manufacturing facilities, with 30,102 square meters of workshop space, were completed in 2009. The Phase III cell manufacturing facilities, with a total floor area of approximately 21,448 square meters of manufacturing and office space, were completed in August 2011. We have passed the required inspection and are in the process of obtaining property ownership certificate from the competent government authority. CSI Cells merged with CSI Solar New Energy (Suzhou) Co., Ltd. in 2012, and obtained the land use right to a piece of land of approximately 10,000 square meters in Suzhou and the certificate for property ownership for approximately 4,833 square meters of floor area.

CSI&GCL Solar Manufacturing (Yan Cheng) Inc., or CSI&GCL Solar Manufacturing, has leased the cell manufacturing facilities of approximately 26,921 square meters (Phase I) since 2015. It has the right and expects to purchase these facilities and obtain the property ownership between 2021 and 2022. In 2016, CSI&GCL Solar Manufacturing obtained the land use right to a piece of land of approximately 133,333 square meters (Phase II and Phase III). The construction of Phase II and Phase III cell manufacturing facilities with floor area of approximately 23,020 square meters was completed in the same year and the commercial operation has commenced since then. In 2017, CSI&GCL Solar Manufacturing obtained the land use rights for approximately 33,664 square meters for the construction of Phase IV. In August 2018, we have obtained the certificate of property ownership for Phase II and Phase III cell manufacturing facilities.

In Baotou of Inner Mongolia, we lease module manufacturing facilities with a floor space area of 10,190 square meters for a term of two years commencing in November 2016. This module manufacturing facility has commenced operation in the first quarter of 2017. In addition, we have built manufacturing facilities with a floor area of approximately 18,000 square meters on a piece of land of approximately 224,996.97 square meters to which we have obtained the land use right certificate of 27,500.14 square meters and we are in the process of obtaining the land use right certificate of 197,496.83 square meters, and the production has commenced in May 2017. We have also started the construction of other facilities producing poly ingots and mono ingots with a floor area of approximately 61,728 square meters on the same land.

In Suzhou, Canadian Solar Sunenergy (Suzhou) Co., Ltd. has obtained the land use right to a piece of land of approximately 60,000 square meters and owns the module manufacturing facility thereon with a floor area of 28,355 square meters, which commenced production in the first quarter of 2017.

CSI Cells (Yancheng) Co., Ltd. has the land use right to a piece of land of approximately 133,857 square meters (Phase I) located in National Yancheng Economic Technical Development Zone of Yancheng City. The floor area of cell manufacturing facilities (Phase I) is approximately 63,496 square meters. A part of the cell manufacturing facilities has completed construction and commenced operations since September 2018.

CSI Modules (DaFeng) Co., Ltd. obtained the land use right to a piece of land of 200,006 square meters in Yan-Cheng Da-Feng Economic Development District in 2017. The module production facility of 68,465.33 square meters (Phase I) completed construction and the production began in September 2018.

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CSI Modules (JiaXing) Co., Ltd. obtained the land use right to a piece of land of 165,057.00 square meters in 2018.

Suzhou Gaochuangte New Energy Development Co., Ltd. and its wholly-owned subsidiary obtained the land use right to a piece of land of 597.76 square meters in 2018 and own the office building thereon with a floor area of 1,971.25 square meters.

In Taiwan, we lease a plant facility of approximately 20,262 square meters located in Hukou Township of Hsinchu City with a five-year term in December 2017. The production of 200 MW module manufacturing is expected to commence in the second quarter of 2019.

In Ontario, we lease approximately 14,851 square meters of manufacturing facilities in Guelph, Ontario, Canada for a term of ten years commencing September 1, 2010. We also lease a warehouse of 7,912 square meters and an office building of 1,146 square meters on the same premises as the Guelph, Ontario, Canada manufacturing facilities for the same term.

In Vietnam, we lease approximately 15,784 square meters of manufacturing facilities in Haiphong City, Vietnam since 2015 and have renewed for another three years commencing August 7, 2018. The production has begun since 2016.

In Thailand, Canadian Solar Manufacturing (Thailand) Co., Ltd. has a land of 179.2 Rai (286,732 square meters) with the ownership certificate obtained. A module manufacturing facility of 29,723 square meters and a cell manufacturing facility of 19,139 square meters were built and the production has commenced in the third quarter of 2016 and in April 2017, respectively. The construction of another cell manufacturing facility with a floor area of 18,100 square meters and a module manufacturing facility with a floor area of 15,460 square meters are under construction and the production will commence in mid-2019.

In Indonesia, we lease a total floor area of approximately 8,000 square meters for our module production facilities, through our 67% owned subsidiary, PT. Canadian Solar Indonesia, which was established under a strategic partnership agreement with PT Comtel Energi. Production commenced in the first quarter of 2016.

Except as disclosed in the "Item 3. Key Information D. Risk Factors Risks Related to Doing Business in China," we believe we have obtained the environmental permits necessary to conduct the business currently carried on by us at our existing manufacturing facilities. For more details, see "B. Business Overview Environmental Matters."

**ITEM 4A. UNRESOLVED STAFF COMMENTS**

None.

**ITEM 5. OPERATING AND FINANCIAL REVIEW AND PROSPECTS**

*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 elsewhere in this annual report on Form 20-F. This discussion may contain forward-looking statements based upon current expectations that involve risks and uncertainties. Our actual results may differ materially from those anticipated in these forward-looking statements as a result of various factors, including those set forth under "Item 3. Key Information D. Risk Factors" or in other parts of this annual report on Form 20-F.*

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**A. Operating Results**

*Factors Affecting Our Results of Operations*

The most significant factors that affect our financial performance and results of operations are:

solar power products pricing;

costs of silicon raw materials and solar ingots, wafers and cells relative to the selling prices of modules;

government subsidies and the availability of financing for solar projects;

industry and seasonal demand;

impact of assets impairment;

solar power project development and sale and EPC and development services;

antidumping and countervailing duty costs and true-up charges; and

foreign exchange.

*Solar Power Products Pricing*

Before 2004, all of our net revenues were generated from sales of specialty solar modules and products. In 2004, we began selling standard solar modules. In 2016, we generated 96.2% of our net revenues from our MSS segment, which primarily comprises the design, development, manufacture and sale of solar power products, solar system kits and provided EPC and O&M services, and 3.8% from our energy segment, which primarily comprises solar power project development and sale, operating solar power projects and sales of electricity. In 2017, we generated 80.0% of our net revenues from our MSS segment and 20.0% from our energy segment. In 2018, we generated 57.9% of our net revenues from our MSS segment and 42.1% from our energy segment.

Our standard solar modules are priced based on the actual flash test result or the nameplate capacity of our modules, expressed in watts-peak. The actual price per watt is affected by overall demand for modules in the solar power market and increasingly by the total power of the module. Higher-powered modules usually command slightly higher prices per watt.

We price our standard solar modules based on the prevailing market price at the time we enter into sales contracts with our customers, taking into account the size of the contract, the strength and history of our relationship with the customer and the costs of silicon raw materials and solar ingots, wafers and cells. During the first few years of our operations, the average selling price for standard solar modules rose year-over-year across the industry, primarily because of high demand. During the period from 2004 to 2008, the average selling price of our standard solar modules ranged from \$3.62 to \$4.23. Following a price peak in the third quarter of 2008, the industry-wide average selling price of standard solar modules has declined sharply, as market demand has declined and competition increased. In 2015 and 2016, the average selling price of our standard solar modules was approximately \$0.58 per watt and \$0.51 per watt, respectively; and, in 2017 and 2018, it was approximately \$0.40 per watt and \$0.34 per watt, respectively. We expect the averaging selling price of our standard solar modules to continue to drop, albeit at a moderate rate.

*Costs of Silicon Raw Materials and Solar Ingots, Wafers and Cells Relative to the Selling Prices of Modules*

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We produce solar modules, which are an array of interconnected solar cells encased in a weatherproof frame, and products that use solar modules. Solar cells are the most important component of solar modules. Our solar cells are currently made from mono-crystalline and multi-crystalline solar wafers through multiple manufacturing steps. Solar wafers are the most important material for making solar cells. Solar ingots are the most important material for making solar wafers. If we are unable to procure silicon raw materials and solar ingots, wafers and cells at reduced prices in line with the decreasing selling prices of our solar modules, our revenues and margins could be adversely impacted, either due to higher manufacturing costs than our competitors or write-downs of inventory, or both. Our market share could decline if our competitors are able to offer better pricing than we are.

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*Government Subsidies and the Availability of Financing for Solar Projects*

We believe that the near-term growth of the market for on-grid applications depends in large part on the availability and size of government subsidies and economic incentives, and the availability and cost of financing for solar projects.

For a detailed discussion of the impact of government subsidies and incentives, possible changes in government policy and associated risks to our business, see "Item 3. Key Information D. Risk Factors Risks Related to Our Company and Our Industry Governments may revise, reduce or eliminate subsidies and economic incentives for solar energy, which could cause demand for our products to decline." and "Item 4. Information on the Company B. Business Overview Sales, Marketing and Customers."

For a detailed discussion of the impact of the availability and cost of debt or equity for solar power projects and our customers' ability to finance the purchase of our products or to construct solar power projects, see "Item 3. Key Information D. Risk Factors Risks Related to Our Company and Our Industry The execution of our growth strategy depends upon the continued availability of third-party financing arrangements for our customers, which is affected by general economic conditions. Tight credit markets could depress demand or prices for solar power products and services, hamper our expansion and materially affect our results of operations."

*Industry and Seasonal Demand*

Our business and revenues depend on the demand for solar power. Although solar power technology has been used for several decades, the solar power market has only started to grow significantly in the past few years. See "Item 3. Key Information D. Risk Factors Risks Related to Our Company and Our Industry We may be adversely affected by volatile solar power market and industry conditions; in particular, the demand for our solar power products and services may decline, which may reduce our revenues and earnings." Industry demand is affected by seasonality. Demand tends to be lower in winter, when adverse weather conditions can complicate the installation of solar power systems, thereby decreasing demand for solar modules. See "Item 3. Key Information D. Risk Factors Risks Related to Our Company and Our Industry Seasonal variations in demand linked to construction cycles and weather conditions may influence our results of operations."

*Impact of Assets Impairment*

For our property, plant and equipment, investments in affiliates, and project assets, if their fair value is less than their carrying value or their carrying value cannot be recoverable, we need to record an impairment loss. We had impairment loss of \$25.7 million, 15.3 million, and \$45.7 million for our property, plant and equipment, investments in affiliates, and project assets in 2016, 2017 and 2018, respectively.

Our business development and operation involves numerous risks and uncertainties which could lead to the assets impairment. These risks and uncertainties include what have been discussed in "Item 3. Key Information D. Risk Factors Risks Related to Our Company and Our Industry We may not continue to be successful in developing and maintaining a cost-effective solar cell, wafer and ingot manufacturing capability." and "Item 3. Key Information D. Risk Factors Risks Related to Our Company and Our Industry Our project development and construction activities may not be successful, projects under development may not receive required permits, property rights, PPAs, interconnection and transmission arrangements, and financing or construction of projects may not commence or continue as scheduled, all of which could increase our costs, delay or cancel a project, and have a material adverse effect on our revenue and profitability."

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*Solar Power Project Development and Sale and EPC and Development Services*

Revenues generated from our energy segment accounted for 3.8%, 20.0% and 42.1% of our net revenues in 2016, 2017 and 2018, respectively. The majority of these revenues came from the sale of solar power projects and the provision of EPC and development services. We intend to monetize the majority of our current portfolio of solar power plants in operation that have an estimated resale value of approximately \$1.2 billion as of February 28, 2019. We also intend to monetize certain of our projects before they reach their respective COD. Our revenues from the energy segment are affected by the timing of the completion and sale of solar power projects. See "Item 4. Information on the Company B. Business Overview Sales, Marketing and Customers Energy Segment Solar Project Development and Sale" for a description of the status of our solar power projects.

Solar power project development and sale and EPC and development services involve numerous risks and uncertainties. For a detailed discussion of these risks and uncertainties, see "Item 3. Key Information D. Risk Factors Risks Related to Our Company and Our Industry Our future success depends partly on our ability to expand the pipeline of our energy segment in several key markets, which exposes us to a number of risks and uncertainties" and "Item 3. Key Information D. Risk Factors Risks Related to Our Company and Our Industry Our project development and construction activities may not be successful, projects under development may not receive required permits, property rights, PPAs, interconnection and transmission arrangements, and financing or construction of projects may not commence or continue as scheduled, all of which could increase our costs, delay or cancel a project, and have a material adverse effect on our revenue and profitability."

*Antidumping and Countervailing Duty Costs and True-up Charges*

In 2018, we booked the benefits of antidumping and countervailing duty provision reversals of \$50.2 million, primarily associated with prior years' module sales based on the updated rates arising from the administrative reviews carried out by the U.S. Department of Commerce.

We have been in the past, and may be in the future, subject to antidumping and countervailing duty rulings and orders. In particular, we have been subject to antidumping and countervailing duty rulings in the U.S., the EU and Canada and have, as a result, been party to lengthy proceedings related thereto. See "Item 8. Financial Information A. Consolidated Statements and Other Financial Information Legal and Administrative Proceedings." The U.S., EU and Canada are important markets for us. Ongoing proceedings relating to, and the imposition of any new, antidumping and countervailing duty rulings and orders or safeguard measures in these markets may result in additional costs to us and/or our customers.

*Foreign Exchange*

The majority of our sales in 2018 were denominated in U.S. dollars, Renminbi and Japanese yen, with the remainder in other currencies such as Euros, Brazilian real, Canadian dollars, Australian dollars and British pounds. The majority of our costs and expenses in 2018 were denominated in Renminbi, primarily related to purchases of solar cells and wafers and silicon and other raw materials, toll manufacturing fees, labor costs and local overhead expenses within the PRC. From time to time, we enter into loan arrangements with commercial banks that are denominated primarily in Renminbi, U.S. dollars and Japanese yen. The majority of our cash and cash equivalents and restricted cash is denominated in Renminbi. See "Item 3. Key Information D. Risk Factors Risks Related to Our Company and Our Industry Fluctuations in exchange rates could adversely affect our business, including our financial condition and results of operations."

*Segment Reporting*

We use the management approach to determine operating segments. The management approach considers the internal organization and reporting used by our chief operating decision maker for

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making decisions, allocating resources and assessing performance. We have identified our chief executive officer as our chief operating decision maker, since he reviews consolidated and segment results when making decisions about allocating resources and assessing performance for us.

Following our decision to expand our business to include both building and selling and building and operating solar power projects, we operated our business in three principal reportable business segments in 2015: MSS segment, energy development segment and electricity generation segment. Following our decision to terminate our plans to create and spin off a publicly-traded "yieldco" that would hold the majority of our solar power projects in operation, we have operated our business in two principal reportable business segments since 2016:

*MSS Segment*, which primarily comprises the design, development, manufacture and sale of solar power products and solar system kits. The MSS segment also provides EPC and O&M services;

*Energy Segment*, which primarily comprises solar power project development and sale, operating solar power projects and sales of electricity.

***Overview of Financial Results***

We evaluate our business using a variety of key financial measures.

*Net Revenues*

*MSS Segment*

Revenues generated from our MSS segment accounted for 96.2%, 80.0% and 57.9% of our net revenues in 2016, 2017 and 2018, respectively. Our revenues from our MSS segment are affected primarily by average selling prices per watt and unit volumes shipped, both of which depend on product supply and demand.

*Energy Segment*

Revenues generated from our energy segment accounted for 3.8%, 20.0% and 42.1% of our net revenues in 2016, 2017 and 2018, respectively. Our revenues from our energy segment are affected primarily by the timing of the completion and sale of solar power projects. See "Item 4. Information on the Company B. Business Overview Sales, Marketing and Customers Energy Segment Solar Project Development and Sale" for a description of the status of our solar power projects.

Revenue recognition for our energy segment, especially our solar power projects, is, in many cases, not linear in nature due to the timing of when all relevant revenue recognition criteria have been met. During 2018, we recognized \$1,542.9 million of revenue from the sale of solar power projects at a point in time. Our revenue recognition policies for the solar power project development are described in " Critical Accounting Policies Revenue Recognition."

Our revenues from sales to customers are recorded net of estimated returns.

*Cost of Revenues*

*MSS Segment*

The cost of revenues of our MSS segment consists primarily of the costs of:

solar cells;

silicon wafers;



high purity and solar grade silicon materials;

materials used in solar cell production, such as metallic pastes;

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other materials for the production of solar modules such as glass, aluminum frames, EVA (ethylene vinyl acetate, an encapsulant used to seal the module), junction boxes and polymer back sheets;

production labor, including salaries and benefits for manufacturing personnel;

warranty costs;

overhead, including utilities, production equipment maintenance, share-based compensation expenses for restricted share units and options granted to employees in our manufacturing department and other support expenses associated with the manufacture of our solar power products;

depreciation and amortization of manufacturing equipment and facilities, which are increasing as we expand our manufacturing capabilities;

inventory write-downs;

solar project EPC services

depreciation charges relating to under-utilized assets; and

antidumping and countervailing duty costs and true-up charges.

Our cost of revenues increased in 2016, and decreased in 2017 and in 2018

Before June 2009, we typically sold our standard solar modules with a two-year guarantee for defects in materials and workmanship and a 10-year and 25-year warranty against declines of more than 10% and 20%, respectively, from the initial minimum power generation capacity at the time of delivery. In June 2009, we increased our guarantee for defects in materials and workmanship to six years. In August 2011, we increased our guarantee for defects in materials and workmanship to ten years and we warrant that, for a period of 25 years, our standard solar modules will maintain the following performance levels:

during the first year, the actual power output of the module will be no less than 97% of the labeled power output;

from the second year to the 24th year, the actual annual power output decline of the module will be no more than 0.7%; and

by the end of the 25th year, the actual power output of the module will be no less than 80% of the labeled power output.

In recent years, we have lengthened the warranty against decline in performance for our Dymond module and bifacial module products to 30 years.

In resolving claims under the workmanship guarantee, we have the option of remedying the defect through repair, refurbishment or replacement of equipment. In resolving claims under the performance warranty, we have the right to repair or replace solar modules at our option.

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We believe our warranty periods are consistent with industry practice. Due to the long warranty period, we bear the risk of extensive warranty claims long after we have shipped our products and recognized revenue. See "Item 3. Key Information D. Risk Factors Risks Related to Our Company and Our Industry We may be subject to unexpected warranty expense that may not be adequately covered by our insurance policies."

We maintain warranty reserves to cover potential liabilities that could arise under these guarantees and warranties. We currently take a 1% warranty provision against our revenue for sales of solar power products.

We have entered into agreements with a group of insurance companies with high credit ratings to back up our warranties. Under the terms of the insurance policies, which are designed to match the

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terms of our solar module product warranty policy, the insurance companies are obliged to reimburse us, subject to certain maximum claim limits and certain deductibles, for the actual product warranty costs that we incur under the terms of our solar module product warranty policy. We record the insurance premiums initially as prepaid expenses and amortize them over the respective policy period of one year. The warranty insurance is renewable annually. See " Critical Accounting Policies Warranty Costs."

Total write-downs of inventory included in our cost of revenue were \$19.5 million, \$17.8 million and \$14.6 million in 2016, 2017 and 2018, respectively.

In 2018, we booked the benefits of antidumping and countervailing duty provision reversals of \$50.2 million, primarily associated with prior years' module sales based on the updated rates arising from the administrative reviews carried out by the U.S. Department of Commerce.

Energy Segment

The cost of revenues of our energy segment consists primarily of the costs of:

acquiring solar power projects;

acquiring and developing solar project sites, including interconnection fees and permitting costs;

solar project EPC and development services;

interest capitalized for solar power projects during construction period;

operating and maintaining solar power plants, including depreciation of solar power plants; and

impairment of project assets.

For solar power projects built by us, we provide a limited workmanship or balance of system warranty against defects in engineering design, installation and construction under normal use, operation and service conditions for a period of up to five years following the energizing of the solar power project. In resolving claims under the workmanship or balance of system warranty, we have the option of remedying through repair, refurbishment or replacement of equipment. We have entered into similar workmanship warranties with our suppliers to back up our warranties. We maintain warranty reserves to cover potential liabilities that could arise under these guarantees and warranties.

Before commissioning solar power projects, we conduct performance testing to confirm that the projects meet the operational and capacity expectations set forth in the agreements. In limited cases, we also provide for an energy generation performance test designed to demonstrate that the actual energy generation for up to the first three years meets or exceeds the modeled energy expectation (after adjusting for actual solar irradiation). In the event that the energy generation performance test performs below expectations, the appropriate party (EPC contractor or equipment provider) may incur liquidated damages capped at a percentage of the contract price.

Gross Profit/Gross Margin

Our gross profit is affected by a number of factors, including the success of and contribution from both of our operating segments, the average selling price of our solar power products, our product mix, loss on firm purchase commitments under long-term supply agreements, our ability to cost-effectively manage our supply chain, the timing of completion of construction of our solar power projects, the timing and pricing of project sales and project financing.

Operating Expenses

Our operating expenses include selling expenses, general and administrative expenses, research development expenses and other operating income, net. Our operating expenses decreased in 2016 and



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increased in 2017 and in 2018. We expect our operating expenses to increase as our net revenues grow in the future.

Selling Expenses

Selling expenses consist primarily of salaries and benefits, transportation and customs expenses for delivery of our products, sales commissions for our sales agents, advertising, promotional and trade show expenses, and other sales and marketing expenses. Our selling expenses decreased in 2016 and increased in 2017 and in 2018. We expect that as we increase our sales volumes in the future, our selling expenses will increase as we hire additional sales personnel, target more markets and initiate additional marketing programs to reach our goal of continuing to be a leading global brand.

General and Administrative Expenses

General and administrative expenses consist primarily of salaries and benefits for our administrative and finance personnel, consulting and professional service fees, government and administration fees and insurance fees. Our general and administrative expenses increased in 2016, 2017 and 2018.

Research and Development Expenses

Research and development expenses consist primarily of costs of raw materials used in our research and development activities, salaries and benefits for research and development personnel and prototype and equipment costs related to the design, development, testing and enhancement of our products and our silicon reclamation program. In 2016, 2017 and 2018, our research and development expenses accounted for 0.6%, 0.8% and 1.2%, respectively, of our total net revenues. We expect that our research and development expenses will increase as we devote more efforts to research and development in the future.

Other Operating Income, Net

Other operating income, net, primarily consists of gains or losses on disposal of solar power systems and property, plant and equipment, and government grants received. In prior years, the net gain or loss on disposal of property, plant and equipment and government grants were immaterial and included in general and administrative expenses. In 2016, given that we have begun to separately present the results of monetization of our solar power systems, we reclassified the prior year immaterial amounts to conform to the current year's presentation.

Share-based Compensation Expenses

Under our share incentive plan, as of December 31, 2018, we had outstanding:

224,502 stock options;

116,500 restricted shares; and

1,781,271 restricted share units.

For a description of the stock options, restricted share units and restricted shares granted, including the exercise prices and vesting periods, see "Item 6. Directors, Senior Management and Employees B. Compensation of Directors and Executive Officers Share-based Compensation Share Incentive Plan." We recognize share-based compensation to employees as expenses in our statement of operations based on the fair value of the equity awards on the date of the grant. The compensation expense is recognized over the period in which the recipient is required to provide services in exchange for the equity award.

We have made an estimate of expected forfeitures and recognize compensation costs only for those equity awards that we expect to vest. We estimate our forfeitures based on past employee retention

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rates and our expectations of future retention rates. We prospectively revise our forfeiture rates based on actual history. Our share-based compensation expenses may change based on changes in actual forfeitures.

For the year ended December 31, 2018, we recorded share-based compensation expenses of approximately \$10.3 million, compared to approximately \$9.3 million for the year ended December 31, 2017. We have allocated these share-based compensation expenses to our cost of revenues, selling expenses, general and administrative expenses and research and development expenses, depending on the job functions of the individuals to whom we granted the options and restricted share units.

The following table sets forth, for the periods indicated, the allocation of our share-based compensation expenses both in absolute amounts and as a percentage of total share-based compensation expenses.

	Years Ended December 31,					
	2016		2017		2018	
	(In thousands of \$, except for percentages)					
Share-based compensation expenses included in:						
Cost of revenues	815	10.5%	958	10.3%	1,053	10.3%
Selling expenses	1,216	15.7%	1,088	11.7%	1,370	13.4%
General and administrative expenses	5,254	67.7%	6,559	70.4%	7,040	68.6%
Research and development expenses	472	6.1%	709	7.6%	795	7.7%
<b>Total share-based compensation expenses</b>	<b>7,757</b>	<b>100.0%</b>	<b>9,314</b>	<b>100.0%</b>	<b>10,258</b>	<b>100.0%</b>

We expect to incur additional share-based compensation expenses as we expand our operations.

### *Interest Expense*

Interest expense consists primarily of interest incurred with respect to our short and long-term borrowings from Chinese commercial banks and international banks, short-term commercial paper, and the convertible senior notes issued by us in February 2014.

### *Gain (Loss) on Change in Fair Value of Derivatives*

We have entered into foreign currency derivatives to hedge part of the risks of our expected cash flows, mainly in Canadian dollars, British pounds, Renminbi and Euros. In 2016, we had a gain on the change in fair value of derivatives of \$27.3 million, which included a \$4.8 million gain on change in fair value of foreign currency derivatives, a \$24.5 million gain on change in fair value of warrants and a \$2.0 million loss in change in fair value of interest rate swap/swaption contracts. In 2017, we had a loss on the change in fair value of derivatives of \$0.3 million, which included a \$2.6 million loss on change in fair value of foreign currency derivatives, a \$0.7 million gain on change in fair value of warrants and a \$1.6 million gain in change in fair value of interest rate swap/swaption contracts. In 2018, we had a loss on the change in fair value of derivatives of \$19.2 million, which included an \$18.4 million loss on change in fair value of foreign currency derivatives and a \$0.8 million loss on change in fair value of interest rate swap contracts.

### *Income Tax Expense*

We recognize deferred tax assets and liabilities for temporary differences between the financial statement and income tax bases of assets and liabilities. Valuation allowances are provided against deferred tax assets when management cannot conclude that it is more likely than not that some portion or all deferred tax assets will be realized.

We are governed by the CBCA, a federal statute of Canada and are registered to carry on business in Ontario. This subjects us to both Canadian federal and Ontario provincial corporate income taxes. Our combined tax rate was 26.5% for each of the years ended 2016, 2017 and 2018.

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PRC enterprise income tax is calculated based on taxable income determined under PRC accounting principles with a uniform enterprise income tax rate of 25%. Certain of our PRC subsidiaries, such as CSI New Energy Holding and CSI Luoyang Manufacturing, once enjoyed preferential enterprise income tax rates. These benefits have, however, expired. In 2018, only Suzhou Sanysolar, CSI Cells, CSI Changshu Manufacturing, Changshu Tegu, Suzhou Gaochuangte and Changshu Tlian enjoyed preferential enterprise income tax rates.

The EIT Law provides that enterprises established outside China whose "de facto management body" is located in China are considered PRC tax residents and will generally be subject to the uniform 25% enterprise income tax rate on their global income. Under the implementation regulations, the term "de facto management body" is defined as substantial and overall management and control over such aspects as the production and business, personnel, accounts and properties of an enterprise. Circular 82 further provides certain specific criteria for determining whether the "de facto management body" of a PRC-controlled offshore incorporated enterprise is located in the PRC. The criteria include whether (a) the premises where the senior management and the senior management bodies responsible for the routine production and business management of the enterprise perform their functions are mainly located within the PRC, (b) decisions relating to the enterprise's financial and human resource matters are made or subject to approval by organizations or personnel in the PRC, (c) the enterprise's primary assets, accounting books and records, company seals, and board and shareholders' meeting minutes are located or maintained in the PRC and (d) 50% or more of voting board members or senior executives of the enterprise habitually reside in the PRC. Although Circular 82 only applies to offshore enterprises controlled by enterprises or enterprise groups located within the PRC, the determining criteria set forth in the Circular 82 may reflect the tax authorities' general position on how the "de facto management body" test may be applied in determining the tax resident status of offshore enterprises. As the tax resident status of an enterprise is subject to the determination by the PRC tax authorities, uncertainties remain with respect to the interpretation of the term "de facto management body" as applicable to our offshore entities. As a substantial number of the members of our management team are located in China, we may be considered as a PRC tax resident under the EIT Law and, therefore, subject to the uniform 25% enterprise income tax rate on our global income.

Under the EIT Law and implementing regulations issued by the State Council, the PRC withholding tax rate of 10% is generally applicable to interest and dividends payable to investors that are not "resident enterprises" in the PRC, to the extent such interest or dividends have their sources within the PRC. We consider the undistributed earnings of our PRC subsidiaries (approximately \$583.3 million as of December 31, 2018) to be indefinitely reinvested in China, and, consequently, we have made no provision for withholding taxes for those amounts.

***Critical Accounting Policies***

We prepare financial statements in accordance with U.S. GAAP, which requires us to make judgments, estimates and assumptions that affect:

the reported amounts of our assets and liabilities,

the disclosure of our contingent assets and liabilities at the end of each fiscal period, and

the reported amounts of revenues and expenses during each fiscal period.

We regularly evaluate these judgments, estimates and assumptions based on our own historical experience, knowledge and assessment of current business and other conditions, our expectations regarding the future based on available information and reasonable assumptions, which together form our basis for making judgments about matters that are not readily apparent from other sources. Since the use of estimates is an integral component of the financial reporting process, our actual results could differ from those estimates. Some of our accounting policies require a higher degree of judgment than others in their application.



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When reviewing our financial statements, the following should be considered:

our selection of critical accounting policies,

the judgment and other uncertainties affecting the application of such policies, and

the sensitivity of reported results to changes in conditions and assumptions.

We believe the following accounting policies involve the most significant judgments and estimates used in the preparation of our financial statements.

*Revenue Recognition*

We recognize revenue when it satisfies a performance obligation by transferring a promised good or service to a customer.

*MSS Segment*

Solar power products, including solar modules, other solar power products, solar system kits and materials related to solar power products are transferred at a point in time when the customer obtains control of the products, which is typically upon shipment or delivery depending on the contract terms. Revenues of solar product sales also include reimbursements received from customers for shipping and handling costs. Sales agreements typically contain the assurance-type customary product warranties but do not contain any post-shipment obligations nor any return or credit provisions, see our accounting policy for warranty.

We assessed whether it is probable that we will collect substantially all of the consideration to which it will be entitled in exchange for the products that will be transferred to the customer. As of December 31, 2016, 2017 and 2018, we had inventories of \$5.9 million, \$7.1 million and \$9.0 million, respectively, relating to sales to customers where revenues were not recognized because the collection of payment was determined to be not probable. The delivered products remain as inventories on consolidated balance sheets, regardless of whether the control has been transferred. If the collection of payment becomes probable in the future, we would then recognize revenue, adjust inventories and recognize cost of revenues.

*Energy Segment*

We recognize revenue for sale of EPC and development services over time based on the estimated progress to completion using a cost-based input method. In applying cost based input methods of revenue recognition, we use the actual costs incurred relative to the total estimated costs to determine our progress towards contract completion and to calculate the corresponding amount of revenue and gross profit to recognize. Cost based input methods of revenue recognition are considered a faithful depiction of our efforts to satisfy EPC and development services contracts and therefore reflect the transfer of goods or services to a customer under such contracts. Costs incurred towards contract completion may include costs associated with direct materials, labor, subcontractors, and other indirect costs related to contract performance. Cost based input methods of revenue recognition require us to make estimates of net contract revenues and costs to complete our projects. In making such estimates, significant judgment is required to evaluate assumptions related to the amount of net contract revenues, including the impact of any performance incentives, liquidated damages, and other payments to customers. Significant judgment is also required to evaluate assumptions related to the costs to complete our projects, including materials, labor, contingencies, and other system costs. If estimated total costs of any contract are greater than the estimated net revenues of the contract, we recognize the entire estimated loss in the period the loss becomes known. The cumulative effect of 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 revisions to estimates are identified and the amounts can be reasonably estimated.

O&M services are transferred over time when customers receive and consume the benefits provided by the Company's performance under the terms of service arrangements. Revenues from O&M services are recognized when the work completed to date does not require re-performances and the costs of O&M services are expensed when incurred.

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Sales of solar power projects are recognized at a point in time when customers obtain control of solar power projects. We recognize revenue for the sale of a solar power project at certain stage due to the timing of when the associated sales contract with the customer is entered into. For sales of solar power projects in which we obtain an interest in the project sold to the customer, we recognize all of the revenue for the consideration received, including the fair value of the non-controlling interest we obtained, and defer any profit associated with the interest obtained.

Electricity revenue is generated primarily by our solar power plants under long-term PPAs and performance based energy incentives. For electricity sold under PPAs, we recognize electricity revenue based on the price stated in the PPAs when electricity has been generated and transmitted to the grid. Performance-based energy incentives are awarded under certain state programs for the delivery of renewable electricity when the conditions attached to it have been met and there is reasonable assurance that the incentives will be received. During the years ended December 31, 2016, 2017 and 2018, we recognized performance-based energy incentives of \$22.8 million, \$10.9 million and \$4.7 million, respectively, related to electricity generated and recognized in revenue.

Certain PPAs are accounted for as operating leases in accordance with ASC 840-20, Operating Leases. Minimum lease payments are recognized over the term of the lease and contingent rents are recorded when the achievement of the contingency becomes probable in accordance with the U.S. GAAP. None of our operating leases have minimum lease payments, so revenue from these contracts is recognized as energy and any related renewable energy attributes are delivered. During the years ended December 31, 2016, 2017 and 2018, the total lease income recognized was \$6.2 million, \$2.5 million and \$1.5 million, respectively, related to these PPAs.

Disaggregation of Revenue

The table represents a disaggregation of revenue from contracts with customers for the years ended December 31, 2016, 2017, and 2018.

The following table represents a disaggregation of revenue recognized at a point in time or over time:

	<b>Years Ended December 31,</b>		
	<b>2016</b>	<b>2017</b>	<b>2018</b>
	<b>(In Thousands of U.S. Dollars)</b>		
<b>MSS segment:</b>			
Revenue recognized at a point in time	2,742,518	2,705,985	2,095,743
Revenue recognized over time	4,128	6,938	73,175
<b>Energy segment:</b>			
Revenue recognized at a point in time	25,755	633,195	1,542,906
Revenue recognized over time	80,677	44,275	32,688
	<b>2,853,078</b>	<b>3,390,393</b>	<b>3,744,512</b>

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Our contract assets and liabilities are as follow:

	At December 31, 2017	At December 31, 2018	Fluctuation	%
(In Thousands of U.S. Dollars, except percentages)				
<b>Contract Assets</b>				
Accounts receivables, unbilled	1,253	38	1,215	3,197%
<b>Contract Liabilities</b>				
Advances from customers	51,739	39,024	12,715	33%
Deferred revenue	47,854	51,381	(3,527)	(7)%
	99,593	90,405	9,188	10%

For the year ended December 31, 2018, \$70.9 million revenue is recognized from the beginning balance of contract liabilities as of January 1, 2018.

Practical Expedients and Exemptions

We apply the new revenue standard requirements to a portfolio of contracts (or performance obligations) with similar characteristics for transactions where it is expected that the effects on the financial statements of applying the revenue recognition guidance to the portfolio would not differ materially from applying this guidance to the individual contracts (or performance obligations) within that portfolio. Therefore, we have elected the portfolio approach in applying the new revenue guidance.

We have made an accounting policy election to not assess whether promised products are performance obligations if they are immaterial in the context of the contract with the customer. If the revenue related to a performance obligation that includes products that are immaterial in the context of the contract is recognized before those immaterial products are transferred to the customer, then the related costs to transfer those products are accrued.

We do not disclose the value of unsatisfied performance obligations for (i) contracts with an original expected length of one year or less and (ii) contracts for which we recognize revenue at the amount to which it has the right to invoice for services performed.

We generally expenses incremental cost of obtaining a contract when incurred because the amortization period would be less than one year. These incremental costs are recorded in operating expenses. Incremental costs of obtaining a contract with an amortization period more than one year are not material to us.

Warranty Costs

We warrant, for a period of ten years, that our solar products will be free from defects in materials and workmanship.

We also warrant that, for a period of 25 years, our standard solar modules will maintain the following performance levels:

during the first year, the actual power output of the module will be no less than 97% of the labeled power output;

from the second year to the 24th year, the actual annual power output decline of the module will be no more than 0.7%; and

by the end of the 25th year, the actual power output of the module will be no less than 80% of the labeled power output.

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In recent years, we have lengthened the warranty against decline in performance for our Dymond module and bifacial module products to 30 years.

For solar power projects built by us, we provide a limited workmanship or balance of system warranty against defects in engineering design, installation and construction under normal use, operation and service conditions for a period of up to five years following the energizing of the solar power project. In resolving claims under the workmanship or balance of system warranty, we have the option of remedying through repair, refurbishment or replacement of equipment. We have entered into similar workmanship warranties with our suppliers to back up our warranties.

We maintain warranty reserves to cover potential liabilities that could arise under these guarantees and warranties. Due to limited warranty claims to date, we accrue the estimated costs of warranties based on an assessment of our competitors' and our own actual claim history, industry-standard accelerated testing, estimates of failure rates from our quality review, and other assumptions that we believe to be reasonable under the circumstances. Actual warranty costs are accumulated and charged against the accrued warranty liability. To the extent that accrual for warranty costs differs from the estimates, we will prospectively revise our accrual rate. We currently record a 1% warranty provision against our revenue for sales of solar power products.

We have entered into agreements with a group of insurance companies with high credit ratings to back up our warranties. Under the terms of the insurance policies, which are designed to match the terms of our solar module product warranty policy, the insurance companies are obliged to reimburse us, subject to certain maximum claim limits and certain deductibles, for the actual product warranty costs that we incur under the terms of our solar module product warranty policy. We record the insurance premiums initially as prepaid expenses and amortize them over the respective policy period of one year.

The warranty obligations that we record relate to defects that existed when a product was sold to the customer. The event that we are insured against under our insurance policies is the sale of a defective product. Accordingly, we view the insured loss attributable to the shipment of defective products covered under our warranty as analogous to potential claims, or claims that have been incurred as of the product shipment date, but not yet reported. We expect to recover all or part of the cost of our obligations with respect to the defective products through insurance claims. Therefore, our accounting policy is to record an asset for the amount determined to be probable of recovery from the insurance claims (not to exceed the amount of the total losses incurred), consistent with the guidance set forth at ASC 410-30.

We consider the following factors in determining whether an insurance receivable that is probable and recoverability can be reasonably estimated:

reputation and credit rating of the insurance company; and

comparison of the solar module product warranty policy against the terms of the insurance policies (to ensure valid warranty claims submitted by customers will be covered by the policy and therefore reimbursed by the insurance companies).

With respect to specific claims submitted, written communications with the insurance company are monitored to ensure the claim has been promptly submitted to and accepted by the insurance company, and reimbursements have been subsequently collected. The successfully processed claims provide further evidence that the insurance policies are functioning as anticipated.

To the extent uncertainties regarding the solvency of insurance carriers or the legal sufficiency of insurance claims (including if they became subject to litigation) were to arise, we would establish a provision for uncollectible amounts based on the specific facts and circumstances. To date, no provision has been determined to be necessary. If an accrual for warranty costs differs from the estimates and we

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prospectively change our accrual rate, this may result in a change to the amount expected to be recovered from insurance.

As the warranty obligation and related recovery asset do not meet the criteria for offsetting, the gross amounts are reported in our consolidated balance sheets. The asset is expected to be realized over the life of the warranty obligation, which is 25 or 30 years and is treated as a non-current asset consistent with the underlying warranty obligation. When a specific claim is submitted, and the corresponding insurance proceeds will be collected within twelve months of the balance sheet date, we will reclassify that portion of the receivable as being current. The insurance receivable amounts were \$61.9 million, \$74.9 million and \$75.6 million at the end of 2016, 2017 and 2018, respectively, and were included as a component of other non-current assets.

We made downward adjustments to our accrued warranty costs of \$7.5 million and \$9.3 million and other non-current assets of \$5.2 million and \$5.6 million, for the years ended December 31, 2017 and 2018, respectively, to reflect the general declining trend of the average selling price of solar modules, which is a primary input into the estimated warranty costs. Accrued warranty costs (net effect of adjustments) of \$9.8 million, \$19.8 million and \$13.2 million are included in cost of revenues for the years ended December 31, 2016, 2017 and 2018, respectively.

*Income Taxes*

Deferred income taxes are recognized for temporary differences between the tax basis of assets and liabilities and their reported amounts in the financial statements, net tax loss carry-forwards and credits using the enacted tax rates expected to apply to taxable income in the periods in which the deferred tax liability or asset is expected to be settled or realized. Deferred tax assets are reduced by a valuation allowance when it is more likely than not that some portion or all of the deferred tax assets will not be realized. The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income during the periods in which those temporary differences become deductible for tax purposes. We have recognized a valuation allowance of \$71.5 million, \$65.4 million and \$76.5 million as of December 31, 2016, 2017 and 2018, respectively.

Current income taxes are provided for in accordance with the laws of the relevant taxing authorities. Before 2016, the components of the deferred tax assets and liabilities were individually classified as current and non-current based on the characteristics of the underlying assets and liabilities, or the expected timing of their use when they did not relate to a specific asset or liability.

Income tax expense includes (a) deferred tax expense, which generally represents the net change in the deferred tax asset or liability balance during the year plus any change in valuation allowances; (b) current tax expense, which represents the amount of tax currently payable to or receivable from a taxing authority; and (c) non-current tax expense, which represents the increases and decreases in amounts related to uncertain tax positions from prior periods and not settled with cash or other tax attributes. We only recognize tax benefits related to uncertain tax positions when such positions are more likely than not of being sustained upon examination. For such positions, the amount of tax benefit that we recognize is the largest amount of tax benefit that is more than fifty percent likely of being sustained upon the ultimate settlement of such uncertain tax position. We record penalties and interests associated with the uncertain tax positions as a component of income tax expense.

We use the flow-through method to account for investment tax credits earned on qualifying projects placed into service. Under this method the investment tax credits are recognized as a reduction to income tax expense in the year the credit arises. The use of the flow-through method also results in a basis difference from the recognition of a deferred tax liability and an immediate income tax expense for reduced future tax depreciation of the related assets. Such basis differences are accounted for pursuant to the income statement method.

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See note 2(ak) Recently issued accounting pronouncements in the notes to our consolidated financial statements, included herein.

**Results of Operations**

The following table sets forth a summary, for the periods indicated, of our consolidated results of operations and each item expressed as a percentage of our total net revenues. Our historical results presented below are not necessarily indicative of the results that may be expected for any future period.

	For the years ended December 31,					
	2016	2017		2018		
	(in thousands of \$, except percentages)					
Net revenues	\$ 2,853,078	100.0%	3,390,393	100.0%	3,744,512	100.0%
MSS segment <sup>(1)</sup>	2,825,270	99.0%	2,850,859	84.1%	2,413,889	64.5%
Energy segment	106,432	3.8%	677,470	20.0%	1,575,594	42.1%
Elimination	(78,624)	(2.8)%	(137,936)	(4.1)%	(244,971)	(6.6)%
Cost of revenues	2,435,890	85.4%	2,752,795	81.2%	2,969,430	79.3%
MSS segment	2,429,207	85.1%	2,390,686	70.5%	1,923,131	51.4%
Energy segment	66,955	2.4%	473,453	14.0%	1,302,779	34.8%
Elimination	(60,272)	(2.1)%	(111,344)	(3.3)%	(256,480)	(6.9)%
Gross profit	417,188	14.6%	637,598	18.8%	775,082	20.7%
MSS segment	396,063	13.8%	460,173	13.6%	490,758	13.1%
Energy segment	39,477	1.4%	204,017	6.0%	272,815	7.3%
Elimination	(18,352)	(0.6)%	(26,592)	(0.8)%	11,509	0.3%
Operating expenses:						
Selling expenses	145,367	5.1%	156,032	4.6%	165,402	4.4%
General and administrative expenses	203,789	7.1%	230,998	6.8%	245,376	6.6%
Research and development expenses	17,407	0.6%	28,777	0.8%	44,193	1.2%
Other operating income, net	(42,539)	(1.5)%	(47,554)	(1.4)%	(44,546)	(1.2)%
Total operating expenses	324,024	11.4%	368,253	10.9%	410,425	11.0%
Income from operations	93,164	3.3%	269,345	7.9%	364,657	9.7%
Other income (expenses)						
Interest expense	(69,723)	(2.4)%	(117,971)	(3.5)%	(106,032)	(2.8)%
Interest income	10,236	0.4%	10,477	0.3%	11,207	0.3%
Gain (loss) on change in fair value of derivatives	27,322	1.0%	(272)	(2)	(19,230)	(0.5)%
Foreign exchange gain (loss)	25,406	0.9%	(23,449)	(0.7)%	6,529	0.2%
Investment income (loss)	(1,532)	(0.1)%	(3,607)	(0.1)%	41,361	1.1%
Gain on repurchase of convertible notes	2,782	0.1%				
Income before income taxes and equity in earnings (loss) of unconsolidated investees	87,655	3.1%	134,523	4.0%	298,492	8.0%
Income tax expense	(17,976)	(0.6)%	(40,951)	(1.2)%	(61,969)	(1.7)%
Equity in earnings (loss) of unconsolidated investees	(4,404)	(0.2)%	9,411	0.3%	5,908	0.2%
Net income	65,275	2.3%	102,983	3.0%	242,431	6.5%
Less: Net income attributable to non-controlling interests	26	0.0%	3,411	0.1%	5,361	0.2%
Net income attributable to Canadian Solar Inc.	65,249	2.3%	99,572	2.9%	237,070	6.3%

(1)

In 2017, the MSS segment provided O&M services which were previously provided by the energy segment. Net revenues, cost of revenues and gross profit of MSS segment and energy segment for

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the years ended December 31, 2016 have been restated to conform to the current year's presentation. In 2018, the MSS segment also provided EPC services.

- (2)  
Less than 0.1%.

***Year Ended December 31, 2018 Compared to Year Ended December 31, 2017***

***Net Revenues.*** Our total net revenues increased by \$354.1 million, or 10.4%, from \$3,390.4 million for the year ended December 31, 2017 to \$3,744.5 million for the year ended December 31, 2018. The increase was primarily due to an increase in revenue contribution from the sale of solar power projects, partially offset by a decrease in shipments from our MSS segment (from 6,539 MW to 5,916 MW) and a decrease in the average selling price of our solar modules. For the year ended December 31, 2018, Asia contributed 42.0%, the Americas contributed 39.4%, and Europe and others accounted for 18.6% of our net revenues. Our top five customers by revenues collectively accounted for 31.9% of our net revenues for the year ended December 31, 2018.

***MSS Segment.*** Revenues generated by our MSS segment decreased by \$437.0 million, or 15.3%, from \$2,850.9 million for the year ended December 31, 2017 to \$2,413.9 million for the year ended December 31, 2018. \$142.1 million of the decreased revenues was attributable to a 5.3% decline in volume of shipments of our solar modules and \$361.2 million was attributable to a 14.2% decline in the average selling price of our solar modules.

Our total solar module shipments recognized in revenue for the year ended December 31, 2018 were 6,817 MW, a decrease of 1.1% from 6,893 MW for the year ended December 31, 2017. Shipments to non-European markets decreased by 485 MW from 6,242 MW for the year ended December 31, 2017 to 5,757 MW for the year ended December 31, 2018, primarily as a result of lower shipments to customers in China, India and the U.S. Shipments to European markets increased by 409 MW from 651 MW for the year ended December 31, 2017 to 1,060 MW for the year ended December 31, 2018.

The average selling price of our solar modules declined from \$0.40 for the year ended December 31, 2017 to \$0.34 for the year ended December 31, 2018. The decline was primarily due to the supply of solar products exceeding demand, policy changes in China starting in June 2018 and a change in the geographic mix of sales.

***Energy Segment.*** Revenues generated by our energy segment increased by \$898.1 million, or 132.6%, from \$677.5 million for the year ended December 31, 2017 to \$1,575.6 million for the year ended December 31, 2018. This increase was primarily due to an increase of \$910.6 million in sales of solar power projects, of which \$584.9 million were in U.S. and \$134.3 million in China, partially offset by a decrease in electricity revenue of \$20.5 million.

***Cost of Revenues.*** Our total cost of revenues increased by \$216.6 million, or 7.9%, from \$2,752.8 million for the year ended December 31, 2017 to \$ 2,969.4 million for the year ended December 31, 2018. The increase was primarily due to an increase in sales of solar power projects, partially offset by a decrease in shipments of our solar modules and lower solar module manufacturing costs. Total cost of revenues as a percentage of total net revenues decreased from 81.2% for the year ended December 31, 2017 to 79.3% for the year ended December 31, 2018.

***MSS Segment.*** Cost of revenues incurred by our MSS segment decreased by \$467.6 million, or 19.6%, from \$2,390.7 million for the year ended December 31, 2017 to \$1,923.1 million for the year ended December 31, 2018. The decrease was primarily due to lower module manufacturing costs and a decrease in shipments of our solar modules. Our module manufacturing cost in China, including purchased polysilicon, wafers and cells, decreased to \$0.20 per watt in December 2018.

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For the year ended December 31, 2018, we booked the benefits of antidumping and countervailing duty provision reversals of \$50.2 million, primarily associated with prior years' module sales based on the updated rates arising from the administrative reviews carried out by the U.S. Department of Commerce.

Energy Segment. Cost of revenues incurred by our energy segment increased by \$829.3 million, or 175.2%, from \$473.5 million for the year ended December 31, 2017 to \$1,302.8 million for the year ended December 31, 2018. The increase was primarily due to an increase in sales of solar power projects.

Gross Profit. As a result of the foregoing, our total gross profit increased by \$137.5 million, or 21.6%, from \$637.6 million for the year ended December 31, 2017 to \$ 775.1 million for the year ended December 31, 2018. Our total gross margin increased from 18.8% for the year ended December 31, 2017 to 20.7% for the year ended December 31, 2018.

MSS Segment. Gross profit for our MSS segment increased by \$30.6 million, or 6.6%, from \$460.2 million for the year ended December 31, 2017 to \$ 490.8 million for the year ended December 31, 2018, primarily due to a decrease in our solar module manufacturing costs, partially offset by a decrease in the average selling price of our solar modules and a decrease in shipments of our solar modules. Gross margin increased from 16.1% for the year ended December 31, 2017 to 20.3% for the year ended December 31, 2018, primarily due to a decrease in our solar module manufacturing cost, partially offset by a decrease in the average selling price of our solar modules.

Energy Segment. Gross profit for our energy segment increased by \$68.8 million, or 33.7%, from \$204.0 million for the year ended December 31, 2017 to \$272.8 million for the year ended December 31, 2018, primarily due to an increase in sales of solar power projects, partially offset by a decrease in electricity sale revenue. Gross margin decreased from 30.1% for the year ended December 31, 2017 to 17.3% for the year ended December 31, 2018, primarily due to a higher proportion of sales of low margin solar power projects in 2018.

Operating Expenses. Our operating expenses increased by \$42.2 million, or 11.5%, from \$368.3 million for the year ended December 31, 2017 to \$410.4 million for the year ended December 31, 2018. Operating expenses as a percentage of our total net revenues increased from 10.9% for the year ended December 31, 2017 to 11.0% for the year ended December 31, 2018.

Selling Expenses. Our selling expenses increased by \$9.4 million, or 6.0%, from \$156.0 million for the year ended December 31, 2017 to \$165.4 million for the year ended December 31, 2018. The increase was primarily due to increase of \$10.6 million in labor cost and \$8.2 million in transaction expenses for projects sold, partially offset by a decrease of \$10.0 million in shipping, handling and storage charges. Selling expenses as a percentage of our net total revenues decreased from 4.6% for the year ended December 31, 2017 to 4.4% for the year ended December 31, 2018.

General and Administrative Expenses. Our general and administrative expenses increased by \$14.4 million, or 6.2%, from \$231.0 million for the year ended December 31, 2017 to \$245.4 million for the year ended December 31, 2018. The increase was primarily due to an increase of \$19.3 million in impairment charge related to certain manufacturing assets and \$14.8 million in labor costs, partially offset by a decrease of \$8.6 million provision for the LDK case and \$3.4 million in bad debt provision. General and administrative expenses as a percentage of our total net revenues decreased from 6.8% for the year ended December 31, 2017 to 6.6% for the year ended December 31, 2018.

Research and Development Expenses. Our research and development expenses increased by \$15.4 million, or 53.6%, from \$28.8 million for the year ended December 31, 2017 to \$44.2 million for the year ended December 31, 2018. The increase was primarily due to an increase of \$3.7 million in materials consumables and \$5.5 million in labor costs. Research and development expenses as a



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percentage of our total net revenues were 0.8% for the year ended December 31, 2017 and 1.2% for the year ended December 31, 2018.

*Other Operating Income, Net.* Our other operating income, net, decreased by \$3.0 million, or 6.3%, from \$47.6 million for the year ended December 31, 2017 to \$44.5 million for the year ended December 31, 2018. The decrease was primarily due to a decrease of \$15.2 million business interruption insurance compensation, partially offset by an increase of \$8.3 million of net gain in sales of solar power system, and \$4.5 million in government grants.

*Income from operations.* As a result of the foregoing, income from operations increased by \$95.3 million, or 35.4%, from \$269.3 million for the year ended December 31, 2017 to \$364.7 million for the year ended December 31, 2018.

*Interest Expense, Net.* Our interest expense, net, decreased by \$12.7 million, or 11.8%, from \$107.5 million for the year ended December 31, 2017 to \$94.8 million for the year ended December 31, 2018. Interest expense decreased by \$11.9 million, or 10.1%, from \$118.0 million for the year ended December 31, 2017 to \$106.0 million for the year ended December 31, 2018. The decrease was primarily due to repayment of borrowing during 2018. Our debt balance was reduced to \$1,963.7 million as of December 31, 2018 compared to \$2,770.4 million as of December 31, 2017. Interest income increased by \$0.7 million, or 7.0%, from \$10.5 million for the year ended December 31, 2017 to \$11.2 million for the year ended December 31, 2018.

*Gain/(Loss) on Change in Fair value of Derivatives.* We recorded a loss of \$19.2 million on change in fair value of derivatives for the year ended December 31, 2018, compared to a loss of \$0.3 million for the year ended December 31, 2017. The loss on change in fair value of derivatives for the year ended December 31, 2018 was due to a loss of \$18.4 million on change in fair value of foreign currency derivatives and a loss of \$0.8 million on change in fair value of swap. The loss on change in fair value of foreign currency derivatives for the year ended December 31, 2018 was attributable to a loss on foreign currency forward and option contracts that we purchased to hedge the fluctuation of exchange rates of foreign currencies, including Renminbi, Canadian dollars and Japanese yen.

*Foreign Exchange Gain/(Loss).* We recorded a foreign exchange gain of \$6.5 million for the year ended December 31, 2018, compared to a foreign exchange loss of \$23.4 million for the year ended December 31, 2017. The gain for the year ended December 31, 2018 was primarily due to the depreciation of Canadian dollar and Renminbi against the U.S. dollar.

*Investment income (loss).* We recorded an investment income of \$41.4 million for the year ended December 31, 2018, compared to an investment loss of \$3.6 million for the year ended December 31, 2017. The increase was primarily due to investment income of \$40.4 million from the sale of non-controlling interests in the Tranquillity and Garland projects in the U.S. and the Pirapora project portfolio in Brazil, partially offset by \$5.7 million investment impairment charge.

*Income Tax Expense.* We recorded an income tax expense of \$62.0 million for the year ended December 31, 2018, compared to an income tax expense of \$41.0 million for the year ended December 31, 2017. The increase of \$21.0 million was primarily due to an increase in the income before tax for the year ended December 31, 2018. Our effective tax rate was 20.36% in 2018, lower than 28.45% in 2017, mainly due to a reduction in deferred tax assets due to the effects of the U.S. Tax Cuts and Jobs Act which resulted in a higher effective tax rate in 2017. The effective tax rate of 2018 was also affected by several permanent items such as tax refunds resulting from prior year tax audits and super deductions of R&D expenses, partially offset by valuation allowance of deferred tax assets.

*Equity in Earnings/(Loss) of Unconsolidated Investees.* Our share of the earnings (loss) of unconsolidated investees was a net gain of \$5.9 million for the year ended December 31, 2018, compared to a net gain of \$9.4 million for the year ended December 31, 2017.

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*Net Income Attributable to Non-Controlling Interest.* The net income attributable to non-controlling interest is the share of net income attributable to the interests of non-controlling shareholders in certain of our subsidiaries in China, Indonesia, Japan and Australia. No net income was generated in connection with the sale of project assets which was attributable to non-controlling interests for the year ended December 31, 2018.

*Net Income Attributable to Canadian Solar Inc.* As a result of the foregoing, we recorded net income of \$237.1 million for the year ended December 31, 2018, which was an increase of \$137.5 million, or 138.1%, compared to our net income of \$99.6 million for the year ended December 31, 2017.

### *Year Ended December 31, 2017 Compared to Year Ended December 31, 2016*

*Net Revenues.* Our total net revenues increased by \$537.3 million, or 18.8%, from \$2,853.1 million for the year ended December 31, 2016 to \$3,390.4 million for the year ended December 31, 2017. The increase was primarily due to an increase in shipments from our MSS segment (from 5,138 MW to 6,539 MW) and an increase in revenue contribution from the sale of solar power projects, partially offset by a decrease in the average selling price of our solar modules. For the year ended December 31, 2017, Asia contributed 56.8%, the Americas contributed 32.7%, and Europe and others accounted for 10.5% of our net revenues. Our top five customers by revenues collectively accounted for 27.7% of our net revenues for the year ended December 31, 2017.

*MSS Segment.* Revenues generated by our MSS segment increased by \$25.6 million, or 0.9%, from \$2,825.3 million for the year ended December 31, 2016 to \$2,850.9 million for the year ended December 31, 2017. The increase was primarily due to an increase of \$800.7 million attributable to a 30.3% increase in shipments of our solar modules, offset by a decrease of \$765.6 million attributable to a 22.2% decline in the average selling price of our solar modules.

Our total solar module shipments recognized in revenue for the year ended December 31, 2017 were 6,893 MW, an increase of 32.5% from 5,204 MW for the year ended December 31, 2016. Shipments to non-European markets increased by 1,744 MW from 4,498.0 MW for the year ended December 31, 2016 to 6,242 MW for the year ended December 31, 2017, primarily to customers in China, the U.S. and India. Shipments to European markets decreased by 54.5 MW from 705.7 MW for the year ended December 31, 2016 to 651.2 MW for the year ended December 31, 2017.

The average selling price of our solar modules declined from \$0.51 for the year ended December 31, 2016 to \$0.40 for the year ended December 31, 2017. The decline was primarily due to the supply of solar products exceeding demand and change in the geographic mix of revenues.

*Energy Segment.* Revenues generated from our energy segment increased by \$571.0 million, or 536.5%, from \$106.4 million for the year ended December 31, 2016 to \$677.5 million for the year ended December 31, 2017. This increase was primarily due to an increase of \$609.6 million in sales of solar power projects, partially offset by a decrease in electricity revenue of \$39.6 million and a decrease of \$2.6 million in development service fees.

*Cost of Revenues.* Our total cost of revenues increased by \$316.9 million, or 13.0%, from \$2,435.9 million for the year ended December 31, 2016 to \$2,752.8 million for the year ended December 31, 2017. The increase was primarily due to an increase in shipments of our solar modules and sales of solar power projects, partially offset by lower solar module manufacturing costs. Total cost of revenues as a percentage of total net revenues decreased from 85.4% for the year ended December 31, 2016 to 81.2% for the year ended December 31, 2017.

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**MSS Segment.** Cost of revenues incurred by our MSS segment decreased by \$38.5 million, or 1.6%, from \$2,429.2 million for the year ended December 31, 2016 to \$2,390.7 million for the year ended December 31, 2017. The decrease was primarily due to lower module manufacturing costs, lower antidumping and countervailing duty rulings related charges and the \$57.6 million reversal of such charges, primarily associated with prior years' module sales based on the final rates of the third administrative review of Solar 1 and the first administrative review of Solar 2, partially offset by an increase in shipments of our solar modules. Our module manufacturing cost in China, including purchased polysilicon, wafers and cells, was \$0.32 per watt in December 2017.

For the year ended December 31, 2017, we made approximately \$7.6 million of cash deposits relating to antidumping and countervailing duty rulings in the U.S, of which \$7.3 million were charged to our cost of revenues. In addition, we booked the benefits of two reversals of \$42.6 million and \$15.0 million, primarily associated with prior years' module sales based on the final rates of the third administrative review of Solar 1 and the first administrative review of Solar 2 carried out by the U.S. Department of Commerce, respectively.

**Energy Segment.** Cost of revenues incurred by our energy segment increased by \$406.5 million, or 607.1%, from \$67.0 million for the year ended December 31, 2016 to \$473.5 million for the year ended December 31, 2017. The increase was primarily due to an increase in sales of solar power projects.

**Gross Profit.** As a result of the foregoing, our total gross profit increased by \$220.4 million, or 52.8%, from \$417.2 million for the year ended December 31, 2016 to \$637.6 million for the year ended December 31, 2017. Our total gross margin increased from 14.6% for the year ended December 31, 2016 to 18.8% for the year ended December 31, 2017.

**MSS Segment.** Gross profit for our MSS segment increased by \$64.1 million, or 16.2%, from \$396.1 million for the year ended December 31, 2016 to \$460.2 million for the year ended December 31, 2017, primarily due to an increase in shipments of our solar modules, a decrease in our solar module manufacturing costs and lower antidumping and countervailing duty rulings related charges and the \$57.6 million benefit of the two reversals relating to the U.S. antidumping and countervailing duty rulings, partially offset by a decrease in the average selling price of our solar modules. Gross margin increased from 14.0% for the year ended December 31, 2016 to 16.1% for the year ended December 31, 2017, primarily due to a decrease in our solar module manufacturing cost, lower charges and the reversal relating to U.S. antidumping and countervailing duty rulings, partially offset by a decrease in the average selling price of our solar modules.

**Energy Segment.** Gross profit for our energy segment increased by \$164.5 million, or 416.8%, from \$39.5 million for the year ended December 31, 2016 to \$204.0 million for the year ended December 31, 2017, primarily due to an increase in sales of solar power projects, partially offset by a decrease in electricity sale revenue. Gross margin decreased from 37.1% for the year ended December 31, 2016 to 30.1% for the year ended December 31, 2017, primarily due to a lower proportion of high margin electricity revenue in 2017.

**Operating Expenses.** Our operating expenses increased by \$44.2 million, or 13.6%, from \$324.0 million for the year ended December 31, 2016 to \$368.3 million for the year ended December 31, 2017. Operating expenses as a percentage of our total net revenues decreased from 11.4% for the year ended December 31, 2016 to 10.9% for the year ended December 31, 2017.

**Selling Expenses.** Our selling expenses increased by \$10.7 million, or 7.3%, from \$145.4 million for the year ended December 31, 2016 to \$156.0 million for the year ended December 31, 2017. The increase was primarily due to increase of \$11.3 million in shipping, handling and storage charges and \$1.5 million in professional service expenses, partially offset by a decrease of \$3.0 million in rental expenses. Selling expenses as a percentage of our net total revenues decreased from 5.1% for the year ended December 31, 2016 to 4.6% for the year ended December 31, 2017.

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*General and Administrative Expenses.* Our general and administrative expenses increased by \$27.2 million, or 13.4%, from \$203.8 million for the year ended December 31, 2016 to \$231.0 million for the year ended December 31, 2017. The increase was primarily due to an increase of \$17.5 million in labor costs, \$8.6 million provision for the LDK case and \$7.0 million in bad debt provision, partially offset by a decrease of \$10.8 million in impairment charges. General and administrative expenses as a percentage of our total net revenues decreased from 7.1% for the year ended December 31, 2016 to 6.8% for the year ended December 31, 2017.

*Research and Development Expenses.* Our research and development expenses increased by \$11.4 million, or 65.3%, from \$17.4 million for the year ended December 31, 2016 to \$28.8 million for the year ended December 31, 2017. The increase was primarily due to an increase of \$6.3 million in materials consumables and \$5.7 million in labor costs. Research and development expenses as a percentage of our total net revenues were 0.6% for the year ended December 31, 2016 and 0.8% for the year ended December 31, 2017.

*Other Operating Income, Net.* Our other operating income, net, increased by \$5.0 million, or 11.8%, from \$42.5 million for the year ended December 31, 2016 to \$47.6 million for the year ended December 31, 2017. The increase was primarily due to a net gain from the sale of certain solar power projects to CSIF in Japan.

*Income from operations.* As a result of the foregoing, income from operations increased by \$176.2 million, or 189.1%, from \$93.2 million for the year ended December 31, 2016 to \$269.3 million for the year ended December 31, 2017.

*Interest Expense, Net.* Our interest expense, net, increased by \$48.0 million, or 80.7%, from \$59.5 million for the year ended December 31, 2016 to \$107.5 million for the year ended December 31, 2017. Interest expense increased by \$48.2 million, or 69.2%, from \$69.7 million for the year ended December 31, 2016 to \$118.0 million for the year ended December 31, 2017. The increase was primarily due to lower capitalized interest and higher debt. Interest income increased by \$0.2 million, or 2.4%, from \$10.2 million for the year ended December 31, 2016 to \$10.5 million for the year ended December 31, 2017.

*Gain/(Loss) on Change in Fair value of Derivatives.* We recorded a loss of \$0.3 million on change in fair value of derivatives for the year ended December 31, 2017, compared to a gain of \$27.3 million for the year ended December 31, 2016. The loss on change in fair value of derivatives for the year ended December 31, 2017 was due to a loss of \$2.6 million on change in fair value of foreign currency derivatives and a gain of \$1.6 million on change in fair value of swap and a gain of \$0.7 million on change in fair value of warrants. The loss on change in fair value of foreign currency derivatives for the year ended December 31, 2017 was attributable to a loss on foreign currency forward contracts that we purchased to hedge the fluctuation of exchange rates of foreign currencies, including British pounds, Euros and Thai Baht.

*Foreign Exchange Gain/(Loss).* We recorded a foreign exchange loss of \$23.4 million for the year ended December 31, 2017, compared to a foreign exchange gain of \$25.4 million for the year ended December 31, 2016. The loss for the year ended December 31, 2017 was primarily due to the appreciation of Canadian dollar and Renminbi against the U.S. dollar. .

*Income Tax Expense.* We recorded an income tax expense of \$41.0 million for the year ended December 31, 2017, compared to an income tax expense of \$18.0 million for the year ended December 31, 2016. The increase in income tax expense in 2017 was primarily due to our higher profit before income tax, more income generated from high tax rate regions, a reduction in deferred tax asset due to effects associated with the U.S. Tax Cuts and Jobs Act, partially offset by a reversal of valuation allowance.

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*Equity in Earnings/(Loss) of Unconsolidated Investees.* Our share of the earnings (loss) of unconsolidated investees was net gain of \$9.4 million for the year ended December 31, 2017, compared to net loss of \$4.4 million for the year ended December 31, 2016.

*Net Income Attributable to Non-Controlling Interest.* The net income attributable to non-controlling interest is the share of net income attributable to the interests of non-controlling shareholders in certain of our subsidiaries in China, Indonesia, Japan and Australia. No net income was generated in connection with the sale of project assets which was attributable to non-controlling interests for the year ended December 31 2017.

*Net Income Attributable to Canadian Solar Inc.* As a result of the foregoing, we recorded net income of \$99.6 million for the year ended December 31, 2017, which was an increase of \$34.3 million, or 52.6%, compared to our net income of \$65.2 million for the year ended December 31, 2016.

**B. Liquidity and Capital Resources**

***Cash Flows and Working Capital***

We are required to make prepayments to some suppliers, primarily suppliers of machinery, silicon raw materials, solar ingots, wafers and cells. Even though we require some customers to make partial prepayments, there is typically a lag between the time we make our prepayments for silicon raw materials and the time our customers make their prepayments.

Our energy segment required significant working capital and capital expenditure financing in 2018 and is expected to continue to do so in the future. The time cycles of our solar power project development and operation can vary substantially and take many years. As a result, we may need to make significant up-front investments of resources before the collection of any cash from the sale or operation of these projects. These investments include payment of interconnection and other deposits, posting of letters of credit, and incurring engineering, permitting, legal and other expenses. We may have to use part of our existing bank facilities to finance the construction of these solar power projects. Depending on the size and number of solar power projects that we are developing and self-financing, our liquidity requirements could be significant. Delays in constructing or completing the sale of any of our solar power projects which we are self-financing could also impact our liquidity.

In 2018, we financed our operations primarily through short-term and long-term borrowings. As of December 31, 2018, we had \$444.3 million in cash and cash equivalents and \$496.7 million in restricted cash. Our cash and cash equivalents consist primarily of cash on hand, bank balances and demand deposits, which are unrestricted as to withdrawal and use, and have original maturities of three months or less. In 2018, our restricted cash was mainly used as collateral to secure bank acceptances and borrowings.

As of March 31, 2019, we had contractual credit facilities with an aggregate limit of approximately \$2,619.4 million. In addition, we had uncommitted credit facilities of approximately \$555.8 million.

As of March 31, 2019, we had approximately \$433.5 million of long-term borrowings, of which \$323.1 million was secured by restricted cash, equity, accounts receivable, inventories, project assets and property, plant and equipment, and \$1,083.0 million of short-term borrowings, of which \$863.6 million was secured by restricted cash, equity, accounts receivable, inventories, project assets and property, land use rights, plant and equipment; and \$280.5 million of long-term borrowings on project assets-current, which was secured by project assets.

The long-term borrowings will mature during the period from the second quarter of 2020 to the fourth quarter of 2038 and bear interest ranging from 1.05% to 8.00% per annum.

The long-term borrowings on project assets current include \$11.1 million with maturity dates in 2020 and \$269.4 million with maturity dates ranging from 2021 to the fourth quarter of 2033, which are

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reclassified as current liabilities because these borrowings are associated with certain solar power projects that are expected to be sold in 2019, and bear interests ranging from 3.7% to 10.5% per annum.

The short-term borrowings will mature during 2019 through the first quarter of 2020 and bear interest ranging from nil to 8% per annum. Our facilities of credit contain no specific extension terms but, historically, we have been able to obtain new short-term borrowings with similar terms shortly before they mature.

In February 2014, we completed an offering of 3,194,700 common shares and \$150 million of 4.25% senior convertible notes. In 2016, we repurchased \$22.5 million of the senior convertible notes at weighted average price of \$85.43 per \$100 par value. The outstanding balance of the senior convertible notes was fully repaid in February 2019.

In January 2016, we signed a \$60.0 million loan facility agreement with International Finance Corporation, or IFC, a member of World Bank Group to fund the construction of our solar cell and module production facilities in Vietnam and other countries approved by IFC. The loan facility expires in June 2020. On the same day, we signed a subscription agreement with IFC pursuant to which IFC agreed to subscribe for 529,661 of our common shares at \$18.88 per share. The subscription was completed in February 2016 and the net proceeds of approximately \$10.0 million have been used for the construction, operation and general corporate purpose of our solar cell and module production facilities in countries approved by IFC. The facility has been fully drawn and the outstanding balance as of March 31, 2019 was \$35.0 million.

In February 2016, we entered into a financing agreement, pursuant to which Goldman Sachs Japan Co., Ltd. agreed to arrange a JPY3.0 billion (\$26.6 million) non-recourse project finance bond with a maturity of 20 years and a fixed coupon rate of 1.4% per annum for the construction of the 10.2 MWp Aomori-Misawa solar power project in Japan. The project reached COD in late 2016 and was subsequently sold together with the associated project bond in September 2018.

In 2016, we entered into a financing agreement with the Export Development Canada, or EDC, pursuant to which EDC agreed to provide bank guarantees or letters of credit of up to \$100 million to support our global project development. Royal Bank of Canada and Toronto Branch of China Construction Bank Corporation serve as fronting banks for the facility. In September 2018, we renewed the agreement with EDC and increased the facility amount to \$125 million with a more focused support for project development activities in North America, Latin America, Europe, Asia and Australia.

In 2016, we obtained a syndicated three-year loan facility of JPY9.6 billion (\$85.2 million) with Sumitomo Mitsui Banking Corporation, or SMBC, acting as the lead arranger and 13 other participating financial institutions. In September 2018, the facility agreement was renewed and extended to JPY10.7 billion (\$97.5 million) with 10 participating financial institutions led by SMBC. The facility is unsecured and loan proceeds will be used to develop our solar project pipeline in Japan and for general corporate working capital purposes.

In December 2016, we secured senior and subordinate non-recourse term loan facilities of JPY14.9 billion (\$132.2 million) to finance the construction and operation of a 55 MWp solar power plant in the Yamaguchi prefecture, Japan. The facilities were arranged by Hanwha Asset Management and have a maturity of 17 years. The project reached COD in May 2018.

In January 2017, we obtained a five-year syndicated credit facility of \$210 million with the Siam Commercial Bank Public Company Limited, or SCB, acting as the lead arranger and China Minsheng Banking Corporation Ltd, as one of the lenders. As of March 31, 2019, \$44.2 million of the facility has been used to finance the construction of our solar cell and module manufacturing facilities in Thailand. Under the same facility agreement, we obtained a working capital facility of THB4.04 billion

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(\$123.9 million) from SCB to support the operations of our manufacturing company in Thailand and \$68 million has been used as of March 31, 2019.

In March 2017, we entered into a three-year credit agreement of JPY4.0 billion (\$35.5 million) with Sumitomo Mitsui Finance and Leasing Company, Limited, a member of Sumitomo Mitsui Financial Group. The facility received commitments from five finance leasing institutions. As of March 31, 2019, we have used proceeds of JPY2.3 billion (\$21.0 million) from the facility to expand the development of our solar power projects in Japan.

In April 2017, we completed our second non-recourse project bond placement of JPY5.4 billion (\$47.9 million) with Goldman Sachs Japan Co., Ltd. to finance the construction of the 19.05 MWp Gunma Aramaki solar power project in Japan. The project bond has a dual-tenor maturity of 1.5 years and 20.3 years, representing the initial and extended tenor respectively, within a single-tranche of bond. The bond pays a fixed coupon of 1.2875% per annum during the initial tenor and, if extended at our option, 1.3588% per annum thereafter. The project reached COD in December 2017.

In May 2017, we secured a five-year non-recourse project financing of AUD65 million (\$50.8 million) with Bank of Tokyo-Mitsubishi UFJ, Ltd. and Clean Energy Finance Corporation for two solar farm power projects, the 17 MW Longreach project and the 30 MW Oakey 1 project, both in Queensland, Australia. In October 2017, we entered into a binding contract with Foresight Solar Fund Limited, or Foresight, pursuant to which Foresight agreed to acquire 49% interests in Longreach and Oakey. The acquisition was completed in the first quarter of 2018. The projects have completed construction and we have an option and intend to sell the remaining 51% interests to Foresight within three years after the projects reach COD.

In November 2017, we completed our second dual-tenor green project bond placement of JPY7.4 billion (\$65.7 million) with Goldman Sachs Japan Co., Ltd. to finance the operation of our 27.3 MWp Tottori solar power project in Japan. The green project bond consists of a dual-tenor maturity of 1.5 years and 18.3 years, representing the initial and extended tenor respectively, within a single-tranche of the bond. The bond pays a fixed coupon of 1.2725% per annum during the initial tenor and, if extended, 1.3113% per annum thereafter. The project was sold to CSIF and the green bond was repaid in September 2018.

In March 2018, we secured a non-recourse 18.5 year term facility of JPY16 billion (\$142.0 million) from Shinsei Bank, Limited to finance the construction of our 53.4 MWp Oita Hijimachi solar power project in Japan. Construction of the project commenced in November 2017 and the project is expected to reach COD in late 2019.

In May 2018, we closed a tax equity investment commitment with U.S. Bancorp Community Development Corporation for the 102 MWp NC 102 project in North Carolina. The investment included debt financing of \$106.7 million, a tax equity bridge loan, term loan and revolving loan provided by Prudential Capital Group. The NC 102 project reached COD in September 2018.

In December 2018, we secured a non-recourse project financing of \$50 million for our 100.1 MWp solar power project in Cafayate, Salta Province, Argentina. The financing package, arranged by CAF Development Bank of Latin America, consists of CAF A-loan of \$30 million with a 15-year tenor, a parallel loan of \$15 million from the Argentinian Development Bank of Investment and Foreign Trade with a 15-year tenor, and another parallel loan of \$5 million from the Bank of the City of Buenos Aires (Banco de la Ciudad) with a 10-year tenor.

Also in December 2018, we closed a non-recourse financing of \$69 million with Banco Nacional de Comercio Exterior, S.N.C., a Mexican Development Bank and Export Credit Agency, and Banco Sabadell, a commercial banking group headquartered in Spain, for the construction of the 68 MWp solar power project in Aguascalientes, Mexico. The financing package consists of a long-term loan of

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\$53.2 million, a letter of credit facility of \$5.6 million, and a VAT short-term loan of \$10.2 million. The project reached COD in January 2019.

In January 2019, we secured a 295 million Brazilian reals (\$76.0 million) financing from Banco do Nordeste S.A. for the 112 MWp Salgueiro solar power project in the northeast state of Pernambuco, Brazil. The financing package provides comprehensive limited-recourse construction and non-recourse operations debt funding over a 20-year tenor based on the concessionary Constitutional Funds Interest Rate (TFC) in Brazil.

Due to market competition, in many cases, we offer credit terms to our customers ranging from 30 days up to 90 days with small advance payments ranging from 5% to 20% of the sale prices. The prepayments are recorded as current liabilities under advances from customers, and amounted to \$90.1 million, \$51.7 million and \$39.0 million as of December 31, 2016, 2017 and 2018, respectively. As the market demand for our products has changed and as we have diversified our geographical markets, we have increased and may continue to increase our credit term sales to certain creditworthy customers after careful review of their credit standings and acceptance of export credit insurance by Sinosure, or other risk mitigation channels such as local credit insurance or factoring.

The following table sets forth a summary of our cash flows for the periods indicated:

	As of December 31,		
	2016	2017	2018
	(in thousands of \$)		
Net cash provided by (used in) operating activities	(278,073)	203,920	216,280
Net cash provided by (used in) investing activities	(1,093,142)	(239,230)	29,071
Net cash provided by (used in) financing activities	1,299,823	165,283	(463,613)
Net increase (decrease) in cash, cash equivalents and restricted cash	(118,021)	181,315	(256,987)
Less: net increase (decrease) in cash and cash equivalents classified within assets held-for-sale at end of period	8,962	(1,119)	(7,843)
Cash, cash equivalents and restricted cash at the beginning of the year	1,134,683	1,007,700	1,190,134
Cash, cash equivalents and restricted cash at the end of the year	1,007,700	1,190,134	940,990

***Operating Activities***

Net cash provided by operating activities was \$216.3 million in 2018, compared to net cash provided by operating activities of \$203.9 million in 2017. The change was primarily due to a \$139.5 million increase in net income and a \$109.8 million decrease in net operating assets in 2018.

Net cash provided by operating activities was \$203.9 million in 2017, compared to net cash used in operating activities of \$278.1 million in 2016. The change was primarily due to a \$37.7 million increase in net income and a \$399.2 million decrease in net operating assets in 2017.

Net cash used in operating activities was \$278.1 million in 2016, compared to net cash provided by operating activities of \$413.7 million in 2015. The change was primarily due to a \$511.1 million increase in working capital investment and a \$108.0 million decrease of net income in 2016.

***Investing Activities***

Net cash provided by investing activities was \$29.1 million in 2018, compared to net cash used in investing activities of \$239.2 million in 2017. The change was primarily due to an increase in proceeds of \$337.8 million for disposal of investment in affiliates (primarily non-controlling interests in certain solar projects), partially offset by \$111.0 million decrease in proceeds from disposal of solar power system during 2018.



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Net cash used in investing activities was \$239.2 million in 2017, compared to net cash used in investing activities of \$1,093.1 million in 2016. The change was primarily due to a decrease of \$791.1 million in payments for construction of our solar power systems.

Net cash used in investing activities was \$1,093.1 million in 2016, compared to \$898.2 million in 2015. The change was primarily due to \$468.7 million increase in payments for construction of our solar power systems and manufacturing plants, partially offset by a reduced payment of \$196.8 million for the acquisition of subsidiaries and \$90.1 million net proceeds from the disposal of solar power systems.

***Financing Activities***

Net cash used in financing activities was \$463.6 million in 2018, compared to net cash provided by financing activities of \$165.3 million in 2017. The change was primarily due to a decrease of \$455.9 million proceeds from borrowings and an increase of \$300.9 million repayment of borrowings, partially offset by \$50.8 million additional contribution payments from tax equity partners of our U.S. projects during 2018.

Net cash provided by financing activities was \$165.3 million in 2017, compared to net cash provided by financing activities of \$1,299.8 million in 2016. The change was primarily due to a decrease of \$405.5 million proceeds from borrowings, a decrease of \$415.5 million in tax equity contribution payments in the U.S. compared with 2016 and the repayment of \$139.0 million of short-term commercial paper in China during 2017.

Net cash provided by financing activities was \$1,299.8 million in 2016, compared to \$619.5 million in 2015. The change was primarily due to \$415.5 million additional contribution payments from tax equity partners of our U.S. projects and net proceeds of \$134.3 million from the issuance of short-term commercial paper in China during 2016.

As of December 31, 2018, we had total outstanding credit facilities of \$3,028 million, of which \$879.7 million were undrawn and available. We believe that our current cash and cash equivalents, anticipated cash flow from operations and existing banking facilities will be sufficient to meet our anticipated cash needs, including our cash needs for working capital and capital expenditures, for the 12 months ending December 31, 2019. We may, however, require additional cash due to changing business conditions or other future developments, including any investments or acquisitions we may decide to pursue.

As of December 31, 2018, we had outstanding short-term borrowings of \$550.7 million with Chinese banks. Between January 1, 2019 and March 31, 2019, we obtained new borrowings of \$247.5 million from Chinese banks, including \$136.2 million with due dates beyond December 31, 2019. Also, between January 1, 2019 and March 31, 2019, we renewed existing bank facilities of \$183.7 million from Chinese banks with due dates beyond December 31, 2019. The availability of commercial loans from Chinese commercial banks may be affected by administrative policies of the PRC government, which in turn may affect our plans for business expansion. If our existing cash or the availability of commercial bank borrowings is insufficient to meet our requirements, we may seek to sell additional equity securities or debt securities or borrow from other sources. We cannot assure that financing will be available in the amounts we need or on terms acceptable to us, if at all. The issuance of additional equity securities, including convertible debt securities, would dilute the holdings of our shareholders. The incurrence of debt would divert cash for working capital and capital expenditures to service debt obligations and could result in operating and financial covenants that restrict our operations and our ability to pay dividends to our shareholders. If we are unable to obtain additional equity or debt financing as required, our business operations and prospects may suffer.

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***Capital Expenditures***

We made capital expenditures of \$1,111.5 million, \$310.7 million and \$316.3 million in 2016, 2017 and 2018, respectively. Our capital expenditures were primarily to maintain and increase our ingot, wafer, cell and module manufacturing capacity and to develop solar power systems. As of December 31, 2018, our commitments for the purchase of property, plant and equipment were \$112.3 million.

***Restricted Net Assets***

Our PRC subsidiaries are required under PRC laws and regulations to make appropriations from net income as determined under accounting principles generally accepted in the PRC, or PRC GAAP, to non-distributable reserves, which include a general reserve, staff welfare and bonus reserve. The general reserve is required to be made at not less than 10% of the profit after tax as determined under PRC GAAP. The boards of directors of our PRC subsidiaries determine the staff welfare and bonus reserves. The general reserves are used to offset future extraordinary losses. Our PRC subsidiaries may, upon a resolution of their boards of directors, convert their general reserves into capital. The staff welfare and bonus reserves are used for the collective welfare of the employees of the PRC subsidiaries. In addition to their general reserves, our PRC subsidiaries are required to obtain approval from the local government authorities prior to decreasing and distributing any registered share capital to their shareholders. Accordingly, both the appropriations to general reserve and the registered share capital of our PRC subsidiaries are considered as restricted net assets. These restricted net assets amounted to \$411.9 million, \$461.8 million and \$ 486.6 million as of December 31, 2016, 2017 and 2018, respectively.

Our operations in China are subject to certain restrictions on the transfer and use of cash within our company. Transfers of cash between our PRC subsidiaries and the Canadian parent company are restricted to normal trade business payments and any further capital contribution from the Canadian parent company may only be made under China's existing foreign currency regulations. Foreign exchange transactions by our PRC subsidiaries under most capital accounts continue to be subject to significant foreign exchange controls and require the approval of or registration with PRC governmental authorities. In particular, if we finance our PRC subsidiaries by means of additional capital contributions, certain government authorities, including the Ministry of Commerce or its local counterparts, must approve these capital contributions. These limitations could affect the ability of our Chinese subsidiaries to obtain foreign exchange through equity financing.

As of December 31, 2018, \$583.3 million of undistributed earnings in our PRC subsidiaries are considered to be indefinitely reinvested so that no provision of withholding taxes has been provided in our consolidated financial statements. Our PRC subsidiaries are required to make appropriations of at least 10% of net income, as determined under PRC GAAP, to a non-distributable general reserve. After making this appropriation, the balance of the undistributed earnings is distributable. Should our PRC subsidiaries subsequently distribute their distributable earnings, they are subject to applicable withholding taxes to the PRC State Administration of Tax.

**C. Research and Development**

We have four research and development centers with state-of-the-art equipment: the Center for Solar Cell Research, the Center for Module Development, the Center for System Product and the Center for Photovoltaic Testing and Reliability Analysis. The Center for Solar Cell Research is focused on developing new high efficiency solar cells and advanced solar cell processing technologies. The Center for Module Development is focused on module innovations, developing new module designs for different markets and application. The Center for System Product aims to develop high quality and low cost off-grid products like total kits, energy storage system, as well as smart grid. It also provides

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system performance evaluation and LCOE benchmarking. The Center for Photovoltaic Testing and Reliability Analysis has been accredited and operating according to ISO/IEC17025 standard since 2009 and is focused on solar module and module components reliability testing and qualification, and solar module performance analysis. It actively participates in and contributes to IEC standard development on solar modules, such as IEC 62804 test method on PID and has been qualified by VDE, CSA, Intertek and TUV Rheinland in their Test Data Acceptance Programs.

As of December 31, 2018, we had approximately 572 employees engaged in research, product development and engineering.

Our research and development activities are generally focused on the following areas:

continuously improving solar cell conversion efficiency and developing new structures and technologies for higher efficiencies;

developing modules with improved design and assembly methods to have higher power output;

improving manufacturing yield and reliability of solar modules and reducing manufacturing costs;

developing smart modules integrated with optimizer or micro-inverters;

testing, data tracing and analysis for module performance and reliability;

designing and developing customized solar modules and products to meet customer requirements; and

developing new methods and equipment for analysis and quality control of incoming materials (such as polysilicon, wafers, cells and other module components).

Going forward, we will focus on the following research and development initiatives which we believe will enhance our competitiveness:

*High efficiency cells.* We have finished commercializing our in-house developed black silicon technology on multi wafers. All our multi cell capacity has been converted as at December 31, 2018. This self-developed, wet chemical texturing is a unique, IP-protected and cost-effective technology and significantly increase solar cell efficiency due to advanced light absorption and surface passivation. We are continuously commercializing PERC (passivated emitter and rear cell) technology in order to further increase cell efficiency. Mass production of PERC commenced in our Yancheng facility in March 2016. We are now expanding the technology to include multi-crystalline (P4 technology) and using it in our manufacturing sites in Yancheng, Suzhou and Thailand. We also have focused research and development initiatives on N-type bifacial cell, PASSCon cell, heterojunction (HJT) cell, IBC cell and other high efficiency cell designs. With these advanced technologies, we can significantly lower the LCOE on the system level and improve our products' market competitiveness.

*Solar module manufacturing technologies.* Since the opening of our Center for Photovoltaic Testing and Reliability Analysis, we have focused on developing state-of-the-art testing and diagnostic techniques that improve solar module production yield, efficiency and reliability. We are the first to convert all our production lines to mass production of five bus-bar cells and modules. We extended our product competitiveness by commencing volume production of our multi bus-bar cell and modules with higher module wattage in the second quarter of 2018. HDM modules are also being produced and shipped. We have developed new technology for PID-resistant modules, which have received certification by the TUV SUD and the VDE testing and certification institutes. Our BiKu, HiKu, HiDM and other module technologies have improved the output power and module efficiency, and more importantly, improved energy generation, system performance and reliability.





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Includes commitments to purchase property, plant and equipment of \$112.3 million and raw materials of \$462.9 million.

- (3) The maturity dates of long-term debt obligations are based on our estimate timing of the monetization of related projects.

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- (4) Interest rates range from 1.05% to 6.31% per annum for long-term debt obligations.
- (5) Assumes no redemption of the convertible notes and none of the convertible notes will be converted into ordinary shares.
- (6) Interest rate is 4.25% per annum on the principal outstanding.

The above table excludes accrued warranty costs of \$50.6 million, liability for uncertain tax positions of \$20.1 million, deferred tax liabilities non-current of \$35.7million and loss contingency accruals of \$24.6 million as we are unable to reasonably estimate the timing of future payments of these liabilities. Other long-term liabilities of \$34.1 million were also excluded in the above table. For additional information, see the notes to our consolidated financial statements, included herein.

**G. Safe Harbor**

This annual report on Form 20-F contains forward-looking statements that relate to future events, including our future operating results, our prospects and our future financial performance and condition, results of operations, business strategy and financial needs, all of which are largely based on our current expectations and projections. These statements are made under the "safe harbor" provisions of the U.S. Private Securities Litigation Reform Act of 1995. You can identify these forward-looking statements by terminology such as "may," "will," "expect," "anticipate," "future," "intend," "plan," "believe," "estimate," "is/are likely to" or similar expressions. Forward-looking statements involve inherent risks and uncertainties. These forward-looking statements include, among other things, statements relating to:

our expectations regarding the worldwide supply and demand for solar power products and the market demand for our products;

our beliefs regarding the importance of environmentally friendly power generation;

our beliefs regarding the value of and ability to monetize our portfolio of solar power projects;

our expectations regarding governmental support for solar power;

our beliefs regarding the fluctuation in availability of silicon, solar wafers and solar cells;

our beliefs regarding our ability to resolve our disputes with suppliers with respect to our long-term supply agreements;

our beliefs regarding the continued growth of the solar power industry;

our beliefs regarding the competitiveness of our solar module products;

our expectations with respect to increased revenue growth and improved profitability;

our expectations regarding the benefits to be derived from our supply chain management and vertical integration manufacturing strategy;

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our ability to continue developing our in-house solar components production capabilities and our expectations regarding the timing and production capacity of our internal manufacturing programs;

our ability to secure adequate silicon and solar cells to support our solar module production;

our beliefs regarding the effects of environmental regulation;

our beliefs regarding the changing competitive landscape in the solar power industry;

our future business development, results of operations and financial condition;



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competition from other manufacturers of solar power products and conventional energy suppliers;

our ability to expand our products and services and to successfully execute plans for our energy segment;

our ability to develop, build and sell solar power projects in Canada, the U.S., Japan, China, Brazil, Mexico, the United Kingdom, Australia and elsewhere; and

our beliefs with respect to the outcome of the investigations and litigation to which we are a party.

Known and unknown risks, uncertainties and other factors may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by forward-looking statements. See "Item 3. Key Information D. Risk Factors" for a discussion of some risk factors that may affect our business and results of operations. These risks are not exhaustive. Other sections of this annual report may include additional factors that could adversely influence our business and financial performance. Moreover, because we operate in an emerging and evolving industry, new risk factors may emerge from time to time. We cannot predict all risk factors, nor can we assess the impact of these factors on our business or the extent to which any factor, or combination of factors, may cause actual result to differ materially from those expressed or implied in any forward-looking statement. We do not undertake any obligation to update or revise the forward-looking statements except as required under applicable law.

## **ITEM 6. DIRECTORS, SENIOR MANAGEMENT AND EMPLOYEES**

### **A. Directors and Senior Management**

The following table sets forth information regarding our directors and executive officers as of the date of this annual report on Form 20-F.

<b>Name</b>	<b>Age</b>	<b>Position/Title</b>
Shawn (Xiaohua) Qu	55	Chairman of the Board, President and Chief Executive Officer
Robert McDermott	77	Lead Independent Director
Lars-Eric Johansson	72	Independent Director
Harry E. Ruda	60	Independent Director
Andrew (Luen Cheung) Wong	61	Independent Director
Arthur (Lap Tat) Wong	59	Independent Director
Huifeng Chang	53	Senior Vice President and Chief Financial Officer
Guangchun Zhang	61	Senior Vice President and Chief Operations Officer
Yan Zhuang	55	Senior Vice President, Chief Commercial Officer and President of Modules and Systems Solutions Business
Arthur (Jian) Chien	58	Senior Vice President, Chief Strategy Officer and President of Energy Business
Jianyi Zhang	61	Senior Vice President, General Counsel and Chief Compliance Officer
Guoqiang Xing	55	Senior Vice President and Chief Technology Officer

#### ***Directors***

*Dr. Shawn (Xiaohua) Qu* has served as our chairman, president and chief executive officer since founding our company in October 2001. Through his leadership, we became a public listed company on the Nasdaq in 2006 and have since firmly established ourselves among the top ranked manufacturers of solar PV products globally. Prior to founding Canadian Solar, Dr. Shawn Qu held various positions in

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product engineering, business development and strategic planning at ATS Automation Tooling Systems, Inc., or ATS, and its solar subsidiary Photowatt International S.A. Prior to ATS, Dr. Shawn Qu was a research scientist at Ontario Power Generation where he worked as a process leader in its solar product commercialization team. In 2011, Dr. Shawn Qu became a visiting professor at Tsinghua University, one of the most prestigious universities in China. Dr. Shawn Qu has published research articles in academic journals including IEEE Quantum Electronics, Applied Physics Letter and Physical Review. He received a Ph.D. in material sciences in 1995 from the University of Toronto, focusing on semiconductor super lattice and optical effects. He also holds a Master of Science in physics from University of Manitoba and a Bachelor of Science in applied physics from Tsinghua University in Beijing.

*Mr. Robert McDermott* has served as lead independent director of our company since August 2006. Mr. McDermott is a corporate director and consultant. Before July 2011, he was a partner with McMillan LLP, a business law firm based in Canada, where he practiced business law, with an emphasis on mergers and acquisitions, securities and corporate finance, and advised boards and special committees of public companies on corporate governance matters. Mr. McDermott was admitted to the Ontario Bar in Canada in 1968. He has a Juris Doctor degree from the University of Toronto in 1966 and a Bachelor of Arts degree from the University of Western Ontario in 1963.

*Mr. Lars-Eric Johansson* has served as an independent director of our company since August 2006. Mr. Johansson has worked in finance and controls positions for more than thirty years in Sweden and Canada. He has been the president and chief executive officer of Ivanhoe Mines Ltd. (formerly Ivanplats Inc. and Ivanhoe Nickel & Platinum Ltd.), a Canadian public mining company since May 1, 2007. From 2003 to 2008, Mr. Johansson was a director and chairperson of the audit committee of Harry Winston Diamond Corporation, a specialist diamond company with assets in the mining and retail segments of the diamond industry. From May 2004 to April 2006, he was an executive vice president and the chief financial officer of Kinross Gold Corporation, a gold mining company dually listed on the Toronto Stock Exchange and the New York Stock Exchange. Between June 2002 and November 2003, Mr. Johansson was an executive vice president and chief financial officer of Noranda Inc., a Canadian mining company dually listed on the Toronto Stock Exchange and the New York Stock Exchange. Until May 2004, Mr. Johansson served as a special advisor at Noranda Inc. From 1989 to May 2002, he was the chief financial officer and senior vice president of Falconbridge Limited, a mining and metals company in Canada listed on the Toronto Stock Exchange. He has chaired the audit committee of Golden Star Resources Ltd., a gold mining company dually listed on the Toronto Stock Exchange and American Stock Exchange, from 2006 to 2010. From 2002 to 2003, he was also a director of Novicor Inc., a company formerly listed on the Toronto Stock Exchange. Mr. Johansson holds an MBA, with a major in finance and accounting, from Gothenburg School of Economics in Sweden.

*Dr. Harry E. Ruda* has served as an independent director of our company since July 2011. He is the Director of the Centre for Advanced Nanotechnology, the Stanley Meek Chair in Nanotechnology and Professor of Applied Science and Engineering at the University of Toronto, Canada. From 1982 to 1984, he developed one of the first theories for electron transport in selectively doped two-dimensional electron gas heterostructures, while working as an IBM post-doctoral fellow. From 1984 to 1989, he was a senior scientist at 3M Corporation, developing some of the first models for electronic transport and optical properties of wide bandgap II-VI semiconductors. Dr. Ruda joined the faculty of the University of Toronto in 1989 in the Materials Science and Engineering and Electrical and Computer Engineering Departments. His research interests focus on the fabrication and modeling of semiconductor nanostructures with applications in the fields of optoelectronics, energy and sensing. Dr. Ruda was one of the founders of a Canadian National Centre of Excellence in Photonics. He has served on the National Science and Engineering Council of Canada and on other government panels, including those of the Department of Energy, Environmental Protection Agency, National Science Foundation in the

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U.S. and the Royal Academy of Engineering and Engineering Physical Sciences Research Council in the United Kingdom. Dr. Ruda is a Fellow of the Royal Society of Canada, a Fellow of the Institute of Physics, a Fellow of the Institute of Nanotechnology, and a Fellow of the Canadian Academy of Engineering. He obtained his Ph.D. in semiconductor physics from the Massachusetts Institute of Technology in 1982.

*Mr. Andrew (Luen Cheung) Wong* has served as an independent director of our company since August 2014. He has also served as a director of Chubb Life Insurance Company Ltd. since 2008, and is an independent director and the vice-chairman of Huazhong In-vehicle Holdings Company Limited, which is listed in Hong Kong Stock Exchange. Previously, Mr. Wong served as a director and a member of the audit committee, nomination and remuneration committee of China CITIC Bank Corporation Limited, a company listed on The Stock Exchange of Hong Kong, between 2013 and 2018. Mr. Wong was the director of Intime Retail (Group) Co. Ltd., a company listed on The Stock Exchange of Hong Kong, between 2013 and 2014, and was the director and a member of audit committee, risk management committee, nomination and remuneration committee of China Minseng Bank, a company listed on The Stock Exchange of Hong Kong, from 2006 to 2012. From 1982 to 2006, Mr. Wong held senior positions at the Royal Bank of Canada, the Union Bank of Switzerland, Citicorp International Limited, a merchant banking arm of Citibank, Hang Seng Bank Limited and DBS Bank Limited, Hong Kong. Mr. Wong was awarded the National Excellent Independent Director by the Shanghai Stock Exchange in 2010 and received the Medal of Honour (Hong Kong SAR) from the Hong Kong SAR Government in 2011. Mr. Wong obtained his Bachelor of Social Sciences (Honours) degree from the University of Hong Kong in 1980 and a Master of Philosophy degree from Hong Kong Buddhist College in 1982.

*Arthur (Lap Tat) Wong* has served as an independent director of our company since March 8, 2019. Mr. Wong currently serves as an independent director and chair of the audit committee of the following companies: China Automotive Systems, Inc., an automotive systems and components manufacturer (NASDAQ: CAAS); Daqo New Energy Corp., a polysilicon manufacturer (NYSE: DQ); and China Maple Leaf Educational Systems Limited, an operator of international schools in China (HKSE: 1317). From 1982 to 2008, Mr. Wong held various positions with Deloitte Touche Tohmatsu (Deloitte) in Hong Kong, San Jose and Beijing, with his last position as a partner in Deloitte's Beijing office. He subsequently served as the Chief Financial Officer of the following companies: Asia New Energy Holdings Pte. Ltd, a manufacturer of fertilizer, chemicals and new energy products, from June 2008 to December 2009; Nobao Renewable Energy Holding Ltd., a renewable energy company, from March 2010 to November 2010; GreenTree Inns Hotel Management Group, Inc., an economy hotel chain, from March 2011 to May 2012; and Beijing Radio Cultural Transmission Company Limited, a music production and music data management service company, from January 2013 to November 2018. Mr. Wong received a Higher Diploma in Accountancy from Hong Kong Polytechnic University in November 1982 and a Bachelor of Science degree in Applied Economics from University of San Francisco in December 1988. He is a fellow of the Hong Kong Institute of Certified Public Accountants; a fellow of the Association of Chartered Certified Accountants; and a member of the American Institute of Certified Public Accountants.

***Executive Officers***

*Dr. Huifeng Chang* has served as our senior vice president and chief financial officer in May 2016. He has 17 years of experience in capital markets, financial investment and risk management. Before joining us, Dr. Chang was the co-head of Sales & Trading at the U.S. subsidiary of China International Capital Corp (CICC) from 2010 to 2015. Prior to that, he was the CEO of CSOP Asset Management based in Hong Kong from early 2008 to 2010, investing funds from China in the international markets. From 2000 to 2008, Dr. Chang was vice president and an equity proprietary trader at Citigroup Equity Proprietary Investments in New York. Before going to New York, Dr. Chang worked at Kamakura

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Corp in Hawaii as a risk consultant to banks in Asia. He received a Ph.D. in soil physics and MBA from University of Hawaii in the early 1990s, M.S. degree from Academia Sinica in 1987 and B.S. degree from Nanjing Agricultural University in 1984.

*Mr. Guangchun Zhang* has served as our chief operations officer since December 2012 and has over 18 years of experience in the PV industry. Prior to joining us, Mr. Zhang worked for Suntech Power Holdings Co., Ltd, as senior vice president for research and development and industrialization of manufacturing technology since December 2005. Prior to joining Suntech, Mr. Zhang previously worked at the Centre for Photovoltaic Engineering at the University of New South Wales in Australia and Pacific Solar Pty. Limited from June 1994 to November 2005. Mr. Zhang was an associate professor in Shandong Technology University in China from February 1982 to May 1994. Mr. Zhang received his bachelor degree in 1982 from the School of Electronic Engineering at Shandong Industrial Institute.

*Mr. Yan Zhuang* has served as our chief commercial officer since May 2012. He also served as our senior vice president of global sales and marketing since July 2011, and prior to that as our vice president of global sales and marketing since June 2009. He was an independent director of our company from September 2007 to June 2009. Mr. Zhuang has worked in corporate branding, sales and marketing positions with, or provided consulting services to, a variety of multinational companies for over 15 years. In 2008, he founded and became a director of INS Research and Consulting. Mr. Zhuang was the head of Asia for Hands-on Mobile, Inc., a global media and entertainment company with operations in China, South Korea and India, from 2006 to 2007. He previously served as our senior vice president of business operations and marketing in Asia. Before joining Hands-on Mobile, Inc., he held various marketing and business operation positions with Motorola Inc., including as its Asia Pacific regional director of marketing planning and consumer insight. Prior to that, he was a marketing consultant in Canada and China. Mr. Zhuang holds a bachelor's degree in electrical engineering from Northern Jiaotong University, China, a Master of Science degree in applied statistics from the University of Alberta, Canada and a Master of Science degree in marketing management from the University of Guelph, Canada.

*Mr. Arthur (Jian) Chien* joined us as senior vice president and chief strategy officer, and president of our energy business in the summer of 2015. He has more than two decades of experience in investment management, capital markets, large scale manufacturing management, and renewable energy project development. From 2007 to 2010, he served as our chief financial officer and held other positions throughout the Company. Between these two periods of service with Canadian Solar, Mr. Chien was the chief executive officer and managing director of Talesun Solar, a Chinese based solar project developer and EPC contractor. Earlier in his career, he held various management positions with companies in Canada, Europe and China, including chief financial officer of the Greater China regional office of the Bekeart Group of Belgium, chief financial officer of China Grand Enterprise Ltd., and managing director of Beijing Encon Investment. He has also served as a board director with two Chinese listed companies. Mr. Chien graduated with a Science degree from the University of Science and Technology of China in 1982. He received a Master's degree in Economics and was a Ph.D. candidate from the University of Western Ontario, Canada.

*Mr. Jianyi Zhang* joined us at the end of February 2016 as senior vice president and chief legal officer, and was appointed as chief compliance officer in May 2016. After graduation from Washington University School of Law, Mr. Zhang worked at Troutman Sanders LLP as an associate from June 1993 to September 1994. Thereafter, he formed a law firm Su & Zhang in Los Angeles, California. He rejoined Troutman Sanders LLP as an associate in April 1995, became a partner in September of 1999 and worked in that position until December 2001. From January 2002 to June 2005, Mr. Zhang worked at Walmart Stores, Inc. first as a senior corporate counsel II and then as senior assistant general counsel. From July 2005 to February 2016, he served, consecutively, as senior advisor to Chinese law firms of Jingtian & Gongcheng Law Firm, Runbo Law Firm, East Associates Law Firm and East & Concord Partners in Beijing. Mr. Jianyi Zhang received his B.A. degree and M.A. degree from the

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University of Helsinki, Finland in 1982 and 1983, respectively. After graduation from the University of Helsinki in 1983, Mr. Zhang worked at the Chinese Foreign Ministry until September 1989. Thereafter, he went to study at Washington University School of Law in St. Louis, Missouri and received his J.D. degree in 1992.

*Dr. Guoqiang Xing* serves as senior vice president and chief technology officer. He joined us in November 2014 as corporate vice president of technology. He has over 22 years of research and development experience in photovoltaic and semiconductor industries. From September 2009 to October 2014, he was the chief technology officer of Hareon Solar, a company listed on the Shanghai Stock Exchange. He was also employed by JA Solar, a company listed on the NASDAQ Stock Market, as the R&D director from January 2008 to August 2009. His experience in the semiconductor industry includes serving as (a) a R&D advanced process director at HHNEC, a company based in Shanghai, from 2005 to 2008, (b) a R&D advanced process director at Semiconductor Manufacturing International, a company listed on the Hong Kong Stock Exchange, from 2002 to 2005, and (c) a member of technical staff at Kilby Center, Texas Instruments, a company listed on the New York Stock Exchange, in Dallas, Texas from 1995 to 2002. He received his Bachelor of Science degree in Physics from Peking University in 1984 and his Ph.D. in Physical Chemistry from Rice University, Houston, Texas in 1993. He was a postdoctoral research scientist in the Chemistry Department at Columbia University from 1993 to 1995.

***Duties of Directors***

Under the CBCA, our directors are required to manage, or to supervise the management of, the business and affairs of our company. They have a duty of loyalty to act honestly and in good faith with a view to our best interests. They also have a duty to exercise the care, diligence and skill that a reasonably prudent person would exercise in comparable circumstances. A shareholder has the right to seek damages if a duty owed by our directors is breached.

The functions and powers of our board of directors include:

convening shareholder meetings and reporting to shareholders at such meetings;

declaring dividends and authorizing other distributions to shareholders;

appointing officers and determining the term of office of officers;

exercising the borrowing powers of our company and mortgaging the property of our company; and

approving the issuance of shares.

**B. Compensation of Directors and Executive Officers**

***Cash Compensation***

We paid our directors and executive officers aggregate cash remuneration, including salaries, bonuses and benefits in kind, of approximately \$5.7 million for 2018. Of this amount, we paid approximately \$0.8 million to our five independent directors and approximately \$4.9 million to our executive officers. The total amount set aside or accrued by us and our subsidiaries to provide pension, retirement or similar benefits for our directors and executive officers was approximately \$0.03 million in 2018.

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***Share Incentive Plan***

In March 2006, we adopted a share incentive plan, or the Plan.

The purpose of the Plan is to promote the success and enhance the value of our company by linking the personal interests of the directors, employees and consultants to those of the shareholders and providing the directors, employees and consultants with an incentive for outstanding performance to generate superior returns to the shareholders. The Plan is also intended to motivate, attract and retain the services of the directors, employees and consultants upon whose judgment, interest and effort the successful conduct of our operations is largely dependent.

In September 2010, the shareholders approved an amendment to the Plan to increase the maximum number of common shares which may be issued pursuant to all awards of restricted shares, options and restricted share units under the Plan to the sum of (i) 2,330,000 plus (ii) the sum of (a) 1% of the number of our outstanding common shares on the first day of each of 2007, 2008 and 2009 plus (b) 2.5% of our outstanding common shares on the first day of each calendar year after 2009. As of March 31, 2019, the maximum number of common shares which may be issued pursuant to all awards of restricted shares, options and restricted share units under the Plan was 15,969,000 common shares, of which 566,190 restricted shares, 3,284,393 options, and 5,543,571 restricted share units (in each case net of forfeitures) have been awarded, leaving 6,574,846 common shares available to be issued.

The following describes the principal terms of the Plan.

*Types of Awards.* We may make the following types of awards under the Plan:

restricted shares, which are common shares that are subject to certain restrictions and may be subject to risk of forfeiture or repurchase;

options, which entitle the holder to purchase our common shares; and

restricted share units, which entitle the holder to receive our common shares

*Plan Administration.* The Compensation Committee of our board of directors administers the Plan, except with respect to awards made to our non-employee directors, where the entire board of directors administers the Plan. The Compensation Committee or the full board of directors, as appropriate, determines the provisions, terms, and conditions of each award.

*Award Agreement.* Awards are evidenced by an award agreement that sets forth the terms, conditions and limitations for each award.

*Eligibility.* We may grant awards to employees, directors and consultants of our company or any of our related entities, which include our subsidiaries and any entities in which we hold a substantial ownership interest. We may, however, grant options that are intended to qualify as incentive share options only to our employees.

*Acceleration of Awards upon Corporate Transactions.* Outstanding awards will accelerate upon a change-of-control where the successor entity does not assume our outstanding awards. In such event, each outstanding award will become fully vested and immediately exercisable, the transfer restrictions on the awards will be released and the repurchase or forfeiture rights will terminate immediately before the date of the change-of-control transaction.

*Exercise Price and Term of Options.* In general, the Compensation Committee determines the exercise price of an option and sets out the price in the award agreement. The exercise price may be a fixed or variable price related to the fair market value of our common shares. If we grant an incentive share option to an employee who, at the time of that grant, owns shares representing more than 10%

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of the voting power of all classes of our share capital, the exercise price cannot be less than 110% of the fair market value of our common shares on the date of that grant and the share option is exercisable for no more than five years from the date of that grant.

The term of an award may not exceed ten years from the date of the grant.

*Vesting Schedule.* In general, the Compensation Committee determines the vesting schedule.

**Restricted Shares**

The following table summarizes, as of March 31, 2019, the restricted shares granted under the Plan to our executive officers and to other individuals, individually and each as a group. We have not granted any restricted shares to our directors. The restricted shares granted in May 2006 vested over a two-year period beginning in March 2006. The vesting periods for all other restricted shares are indicated in the notes below.

Name	Restricted Shares Granted	Restricted Shares Vested	Restricted Shares Forfeited	Date of Grant
<b>Employees</b>				
Twelve individuals as a group	330,860	330,860		May 30, 2006
Hanbing Zhang <sup>(3)</sup>	116,500 <sup>(4)</sup>	116,500		July 28, 2006
<b>Employees as a group</b>	<b>447,360</b>	<b>447,360</b>		
<b>Other Individuals</b>				
One individual	2,330 <sup>(1)</sup>	2,330		May 30, 2006
One individual	116,500 <sup>(2)</sup>	116,500		June 30, 2006
<b>Other Individuals as a group</b>	<b>118,830</b>	118,830		
<b>Total Restricted Shares</b>	<b>566,190</b>	<b>566,190</b>		

(1) Vest on accelerated termination.

(2) Vest over a two-year period from the date of grant.

(3) The wife of Dr. Shawn Qu, our founder, Chairman, President and Chief Executive Officer.

(4) Vest over a four-year period from the date of grant.

**Options**

The following table summarizes, as of March 31, 2019, the options granted under the Plan to our directors and executive officers and to other individuals, individually and as a group. The options granted to our independent directors vest immediately. Unless otherwise noted, all other options granted vest over a four-year period (one-quarter on each anniversary date) from the date of grant, and

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exercise prices are equal to the average of the trading prices of the common shares for the five trading days preceding the date of grant.

Name	Common Shares Underlying Options Granted	Common Shares Underlying Options Exercised	Common Shares Underlying Options Forfeited	Common Shares Underlying Options Outstanding	Exercise Price (\$ per Share)	Date of Grant	Date of Expiration
<b>Directors:</b>							
Shawn (Xiaohua) Qu	20,000	20,000			3.18	March 12, 2009	March 11, 2019
	25,000			25,000	11.33	August 27, 2010	August 26, 2020
	18,779			18,779	9.33	May 20, 2011	May 19, 2021
Robert McDermott	46,600 <sup>(1)</sup>	46,600			15.00 <sup>(3)</sup>	August 8, 2006	
	23,300 <sup>(2)</sup>	23,300			9.88	July 1, 2007	
	23,300 <sup>(2)</sup>		23,300		41.75 <sup>(4)</sup>	June 26, 2008	June 25, 2018
	23,300 <sup>(2)</sup>			23,300	13.75 <sup>(4)</sup>	June 29, 2009	June 28, 2019
						September 20, 2010	September 19, 2020
	23,300 <sup>(2)</sup>			23,300	12.09 <sup>(4)</sup>		
	23,300 <sup>(2)</sup>	23,300			9.81 <sup>(4)</sup>	June 27, 2011	
	23,300 <sup>(2)</sup>	23,300			3.03 <sup>(4)</sup>	June 11, 2012	
	23,300 <sup>(2)</sup>	23,300			8.29 <sup>(4)</sup>	June 7, 2013	
Lars-Eric Johansson	46,600 <sup>(2)</sup>	46,600			15.00 <sup>(3)</sup>	August 8, 2006	
	23,300 <sup>(2)</sup>	23,300			9.88 <sup>(4)</sup>	July 1, 2007	
	23,300 <sup>(2)</sup>		23,300		41.75 <sup>(4)</sup>	June 26, 2008	June 25, 2018
	23,300 <sup>(2)</sup>	23,300			13.75 <sup>(4)</sup>	June 29, 2009	
						September 20, 2010	
	23,300 <sup>(2)</sup>	23,300			12.09 <sup>(4)</sup>		
	23,300 <sup>(2)</sup>	23,300			9.81 <sup>(4)</sup>	June 27, 2011	
	23,300 <sup>(2)</sup>	23,300			3.03 <sup>(4)</sup>	June 11, 2012	
	23,300 <sup>(2)</sup>			23,300	8.29 <sup>(4)</sup>	June 7, 2013	June 6, 2023
Harry E. Ruda	23,300 <sup>(2)</sup>	23,300			8.31 <sup>(4)</sup>	August 14, 2011	
	23,300 <sup>(2)</sup>	23,300			3.03 <sup>(4)</sup>	June 11, 2012	
	23,300 <sup>(2)</sup>			23,300	8.29 <sup>(4)</sup>	June 7, 2013	June 6, 2023
<b>Directors as a Group</b>	<b>553,079</b>	<b>369,500</b>	<b>46,600</b>	<b>136,979</b>			
<b>Executive Officers:</b>							
Yan Zhuang	23,300 <sup>(2)</sup>	23,300			7.36	September 24, 2007	
	23,300 <sup>(2)</sup>		23,300		41.75	June 26, 2008	June 25, 2018
	80,000	80,000			9.37	May 23, 2009	
	15,000	15,000			11.33	August 27, 2010	
	11,268	11,268			9.33	May 20, 2011	
Arthur (Jian) Chien	46,600 <sup>(1)</sup>	46,600			4.29	August 8, 2006	
	23,300 <sup>(2)</sup>	23,300			9.88	July 1, 2007	
						September 24, 2007	
	46,600	34,950	11,650		7.36 <sup>(4)</sup>		
	20,000	5,000	15,000		3.18	March 12, 2009	
	15,000		15,000		11.33	August 27, 2010	
<b>Executive Officers as a Group</b>	<b>304,368</b>	<b>239,418</b>	<b>64,950</b>				
<b>Employees:</b>							
Ten employees as a group	791,035	669,875	121,160		2.12	May 30, 2006	
Twenty-eight employees as a group	126,170	92,968	33,202		4.29	May 30, 2006	
One employee	2,330 <sup>(6)</sup>	2,330			4.29	May 30, 2006	
Two employees as a group	51,260	51,260			4.29	June 30, 2006	
One employee	64,075	64,075			4.29	July 17, 2006	
Hanbing Zhang <sup>(7)</sup>	46,600	46,600			4.29	July 28, 2006	
One employee	58,250	58,250			12.00 <sup>(8)</sup>	August 8, 2006	August 7, 2018
Three employees as a group	11,650	9,903	1,747		12.00 <sup>(8)</sup>	August 31, 2006	
Three employees as a group	79,900	58,250	21,650		12.10	March 1, 2007	
One employee	6,990	1,748	5,242		12.10	March 1, 2007	
Five employees as a group	52,280	5,413	46,867		8.21	August 17, 2007	



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Eight employees as a group	39,208	34,376	4,832	7.36	September 24, 2007
Thirteen employees as a group	193,445	140,113	53,332	7.36	September 24, 2007
Six employees as a group	36,136	25,000	11,136	19.55	February 28, 2008
One employee	10,000		10,000	19.40	March 3, 2008
Two employees as a group	18,000		18,000	20.67	March 31, 2008
Two employees as a group	53,300		53,300	46.28	June 26, 2008

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Name	Common Shares Underlying Options Granted	Common Shares Underlying Options Exercised	Common Shares Underlying Options Forfeited	Common Shares Underlying Options Outstanding	Exercise Price (\$ per Share)	Date of Grant	Date of Expiration
Four employees as a group	30,000	5,000	25,000		27.88	August 7, 2008	
Seventy-eight employees as a group	400,200	268,090	132,110		3.18	March 12, 2009	March 11, 2019
Hanbing Zhang <sup>(7)</sup>	6,000	6,000			3.18	March 12, 2009	March 11, 2019
One employee	20,000	20,000			5.26	March 30, 2009	
Eighteen employees as a group	59,400	40,600	18,800		9.37	May 23, 2009	
One employee	10,000		10,000		11.58	May 31, 2009	
One employee	23,300	23,300			13.75 <sup>(4)</sup>	June 29, 2009	
Seven employees as a group	30,800	13,200	17,600		15.18	August 6, 2009	
Fourteen employees as a group	82,600	60,600	22,000		16.10	November 8, 2009	
One hundred and thirty-one employees as a group	483,600	240,000	239,675	3,925	11.33	August 27, 2010	August 26, 2020
Hanbing Zhang <sup>(7)</sup>	12,000			12,000	11.33	August 27, 2010	August 26, 2020
One employee	23,300	23,300			12.09 <sup>(4)</sup>	September 20, 2010	
One employee	100,000		100,000		15.19	October 8, 2010	
One hundred and fifty-three employees as a group	236,000	128,700	96,000	11,300	15.24	November 14, 2010	November 13, 2020
Five employees as a group	32,900	24,950	4,200	3,750	13.99	March 5, 2011	March 4, 2021
Seventy-three employees as a group	353,064	195,434	137,094	20,536	9.33	May 20, 2011	May 19, 2021
Hanbing Zhang <sup>(7)</sup>	7,512			7,512	9.33	May 20, 2011	May 19, 2021
Five employees as a group	150,000	45,000	105,000		8.94	June 1, 2011	
One employee	23,300	23,300			9.81 <sup>(4)</sup>	June 27, 2011	
One employee	60,688	60,688			9.52	July 20, 2011	
Twenty employees as a group	74,000	27,000	44,500	2,500	3.03	November 14, 2011	November 13, 2021
<b>Employees as a group</b>	<b>3,859,293</b>	<b>2,465,323</b>	<b>1,332,447</b>	<b>61,523</b>			
Two individuals as a group	11,650	11,650			15.00 <sup>(3)</sup>	April 13, 2007	
<b>Individuals as a group</b>	<b>11,650</b>	<b>11,650</b>					
<b>Total Options</b>	<b>4,728,390</b>	<b>3,085,891</b>	<b>1,443,997</b>	<b>198,502</b>			

- (1) Vest in two equal installments, the first upon the date of grant and the second upon the first year anniversary of the date of grant as long as the director remains in service.
- (2) Vest immediately upon the date of grant.
- (3) The initial public offering price of the common shares.
- (4) Exercise price equal to the average of the trading prices of the common shares for the 20 trading days preceding the date of grant.
- (5) Vest one year after the date of grant.
- (6) Vesting accelerated on termination.
- (7) The wife of Dr. Shawn Qu, our founder, Chairman, President and Chief Executive Officer.
- (8) 80% of the initial public offering price of the common shares.

Before 2014, we agreed to grant each of our then independent directors, Robert McDermott, Lars-Eric Johansson and Harry E. Ruda, options to purchase 23,300 of our common shares immediately after each annual shareholder meeting at an exercise price equal to the average of

the trading price of our common shares for the 20 trading days ending on such date. These options vested immediately.

***Restricted Share Units***

The following table summarizes, as of March 31, 2019, the restricted share units granted under the Plan to our directors and executive officers and to other individuals, individually and as a group. The restricted share units granted on May 8, 2011 vested on the anniversary of the date of grant. The restricted share units granted to our independent directors vest on the earlier of the date that the

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director ceases to be a member of our board of directors for any reason and three years after the date of the grant. The other restricted share units granted vest over a four-year period (one-quarter on each anniversary date) from the date of grant.

Name	Restricted Share Units Granted	Restricted Share Units Vested	Restricted Share Units Forfeited	Date of Grant	Expiration	
<b>Directors:</b>						
Shawn (Xiaohua) Qu	6,154 <sup>(1)</sup>	6,154		May 8, 2011		
	13,706 <sup>(2)</sup>	13,706		May 20, 2011		
	75,075 <sup>(2)</sup>	75,075		March 16, 2012		
	67,024 <sup>(2)</sup>	67,024		March 9, 2013		
	11,983 <sup>(2)</sup>	11,983		May 4, 2014		
	8,274 <sup>(2)</sup>	6,205		May 3, 2015	May 2, 2025	
	20,216 <sup>(2)</sup>	10,108		July 8, 2016	July 7, 2026	
	121,951 <sup>(6)</sup>	121,951		November 6, 2016		
	22,607 <sup>(2)</sup>	5,652		May 17, 2017	May 16, 2027	
	77,289 <sup>(6)</sup>	48,310		November 5, 2017	November 4, 2027	
	18,018 <sup>(2)</sup>			May 13, 2018	May 12, 2028	
				November 10, 2018	November 9, 2028	
	Robert McDermott	83,805 <sup>(6)</sup>	10,476		July 1, 2014	
		1,020 <sup>(5)</sup>	1,020		October 1, 2014	
800 <sup>(5)</sup>		800		January 1, 2015		
1,274 <sup>(5)</sup>		1,274		April 1, 2015		
880 <sup>(5)</sup>		880		July 1, 2015		
993 <sup>(5)</sup>		993		October 1, 2015		
1,820 <sup>(5)</sup>		1,820		January 1, 2016		
1,033 <sup>(5)</sup>		1,033		April 1, 2016	March 31, 2026	
1,572 <sup>(5)</sup>				July 1, 2016	June 30, 2026	
2,051 <sup>(5)</sup>				October 1, 2016	September 30, 2026	
					December 31, 2026	
2,411 <sup>(5)</sup>				January 1, 2017	March 31, 2027	
2,562 <sup>(5)</sup>				April 1, 2017	June 30, 2027	
1,901 <sup>(5)</sup>				July 1, 2017	September 30, 2027	
1,818 <sup>(5)</sup>				October 1, 2017	December 31, 2027	
1,767 <sup>(5)</sup>				January 1, 2018	March 31, 2028	
1,802 <sup>(5)</sup>				April 1, 2018	June 30, 2028	
2,458 <sup>(5)</sup>				July 1, 2018	September 30, 2028	
2,056 <sup>(5)</sup>			October 1, 2018	December 31, 2029		
Lars-Eric Johansson	2,096 <sup>(5)</sup>			January 1, 2019		
	1,020 <sup>(5)</sup>	1,020		July 1, 2014		
	800 <sup>(5)</sup>	800		October 1, 2014		
	1,274 <sup>(5)</sup>	1,274		January 1, 2015		
	880 <sup>(5)</sup>	880		April 1, 2015		
	993 <sup>(5)</sup>	993		July 1, 2015		
	1,820 <sup>(5)</sup>	1,820		October 1, 2015		
	1,033 <sup>(5)</sup>	1,033		January 1, 2016		
	1,572 <sup>(5)</sup>			April 1, 2016	March 31, 2026	
	2,051 <sup>(5)</sup>			July 1, 2016	June 30, 2026	
				October 1, 2016	September 30, 2026	
					December 31, 2026	
	2,411 <sup>(5)</sup>			January 1, 2017	March 31, 2027	
	2,562 <sup>(5)</sup>			April 1, 2017	June 30, 2027	
	1,901 <sup>(5)</sup>			July 1, 2017	September 30, 2027	
	1,818 <sup>(5)</sup>			October 1, 2017	December 31, 2027	
	1,767 <sup>(5)</sup>			January 1, 2018	March 31, 2028	
	1,802 <sup>(5)</sup>			April 1, 2018		

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2,458(5)	July 1, 2018	June 30, 2028
2,056(5)	October 1, 2018	September 30, 2028
2,096(5)	January 1, 2019	December 31, 2029

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Name	Restricted Share Units Granted	Restricted Share Units Vested	Restricted Share Units Forfeited	Date of Grant	Expiration	
Harry E. Ruda	1,020 <sup>(5)</sup>	1,020		July 1, 2014		
	800 <sup>(5)</sup>	800		October 1, 2014		
	1,274 <sup>(5)</sup>	1,274		January 1, 2015		
	880 <sup>(5)</sup>	880		April 1, 2015		
	993 <sup>(5)</sup>	993		July 1, 2015		
	1,820 <sup>(5)</sup>	1,820		October 1, 2015		
	1,033 <sup>(5)</sup>	1,033		January 1, 2016		
	1,572 <sup>(5)</sup>			April 1, 2016	March 31, 2026	
	2,051 <sup>(5)</sup>			July 1, 2016	June 30, 2026	
	2,228 <sup>(5)</sup>			October 1, 2016	September 30, 2026	
	2,411 <sup>(5)</sup>			January 1, 2017	December 31, 2026	
	2,562 <sup>(5)</sup>			April 1, 2017	March 31, 2027	
	1,901 <sup>(5)</sup>			July 1, 2017	June 30, 2027	
	1,818 <sup>(5)</sup>			October 1, 2017	September 30, 2027	
	1,767 <sup>(5)</sup>			January 1, 2018	December 31, 2027	
	1,802 <sup>(5)</sup>			April 1, 2018	March 31, 2028	
	2,458 <sup>(5)</sup>			July 1, 2018	June 30, 2028	
	2,056 <sup>(5)</sup>			October 1, 2018	September 30, 2028	
	2,096 <sup>(5)</sup>			January 1, 2019	December 31, 2029	
	Andrew (Luen Cheung) Wong	610 <sup>(5)</sup>	610		August 7, 2014	
Wong	800 <sup>(5)</sup>	800		October 1, 2014		
	1,274 <sup>(5)</sup>	1,274		January 1, 2015		
	880 <sup>(5)</sup>	880		April 1, 2015		
	993 <sup>(5)</sup>	993		July 1, 2015		
	1,820 <sup>(5)</sup>	1,820		October 1, 2015		
	1,033 <sup>(5)</sup>	1,033		January 1, 2016		
	1,572 <sup>(5)</sup>	1,572		April 1, 2016		
	2,051 <sup>(5)</sup>			July 1, 2016	June 30, 2026	
	2,228 <sup>(5)</sup>			October 1, 2016	September 30, 2026	
	2,411 <sup>(5)</sup>			January 1, 2017	December 31, 2026	
	2,562 <sup>(5)</sup>			April 1, 2017	March 31, 2027	
	1,901 <sup>(5)</sup>			July 1, 2017	June 30, 2027	
	1,818 <sup>(5)</sup>			October 1, 2017	September 30, 2027	
	1,767 <sup>(5)</sup>			January 1, 2018	December 31, 2027	
	1,802 <sup>(5)</sup>			April 1, 2018	March 31, 2028	
	2,458 <sup>(5)</sup>			July 1, 2018	June 30, 2028	
	2,056 <sup>(5)</sup>			October 1, 2018	September 30, 2028	
	2,096 <sup>(5)</sup>			January 1, 2019	December 31, 2029	
	Arthur (Lap Tat) Wong	559 <sup>(5)</sup>			March 8, 2019	March 7, 2029
	<b>Directors as a group</b>	<b>656,419</b>	<b>409,086</b>			
<b>Executive Officers</b>						
Huifeng Chang	23,340 <sup>(2)</sup>	17,505		May 8, 2016	May 7, 2026	
	13,477 <sup>(2)</sup>	6,738		July 8, 2016	July 7, 2026	
	15,072 <sup>(2)</sup>	3,768		May 17, 2017	May 16, 2027	
	12,012 <sup>(2)</sup>			May 13, 2018	May 12, 2028	
Guangchun Zhang	80,000 <sup>(2)</sup>	80,000		March 9, 2013		
	7,262 <sup>(2)</sup>	7,262		May 4, 2014		
	5,516 <sup>(2)</sup>	4,137		May 3, 2015	May 2, 2025	

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	13,477 <sup>(2)</sup>	6,738	July 8, 2016	July 7, 2026
	15,072 <sup>(2)</sup>	3,768	May 17, 2017	May 16, 2027
	12,012 <sup>(2)</sup>		May 13, 2018	May 12, 2028
Yan Zhuang	2,564 <sup>(1)</sup>	2,564	May 8, 2011	
	8,224 <sup>(2)</sup>	8,224	May 20, 2011	
	45,045 <sup>(2)</sup>	45,045	March 16, 2012	
	40,214 <sup>(2)</sup>	40,214	March 9, 2013	
	7,988 <sup>(2)</sup>	7,988	May 4, 2014	
	5,516 <sup>(2)</sup>	4,137	May 3, 2015	May 2, 2025
	13,477 <sup>(2)</sup>	6,738	July 8, 2016	July 7, 2026
	15,072 <sup>(2)</sup>	3,768	May 17, 2017	May 16, 2027
	12,012 <sup>(2)</sup>		May 13, 2018	May 12, 2028

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Name	Restricted Share Units Granted	Restricted Share Units Vested	Restricted Share Units Forfeited	Date of Grant	Expiration
Arthur (Jian) Chien	13,445 <sup>(2)</sup>	10,084		June 26, 2015	June 25, 2025
	13,477 <sup>(2)</sup>	6,738		July 8, 2016	July 7, 2026
	15,072 <sup>(2)</sup>	3,768		May 17, 2017	May 16, 2027
	12,012 <sup>(2)</sup>			May 13, 2018	May 12, 2028
Jianyi Zhang	25,934 <sup>(2)</sup>	19,450		May 8, 2016	May 7, 2026
	13,477 <sup>(2)</sup>	6,738		July 8, 2016	July 7, 2026
	15,072 <sup>(2)</sup>	3,768		May 17, 2017	May 16, 2027
	12,012 <sup>(2)</sup>			May 13, 2018	May 12, 2028
Guoqiang Xing				December 26, 2014	
	5,717 <sup>(2)</sup>	5,717			
	2,758 <sup>(2)</sup>	2,068		May 3, 2015	May 2, 2025
	6,739 <sup>(2)</sup>	3,369		July 8, 2016	July 7, 2026
	3,586 <sup>(2)</sup>	1,793		May 17, 2017	May 16, 2027
	15,072 <sup>(2)</sup>	3,768		May 17, 2017	May 16, 2027
	12,012 <sup>(2)</sup>		May 13, 2018	May 12, 2028	
<b>Executive Officers as a group</b>	<b>513,737</b>	<b>315,855</b>			
<b>Employees</b>					
Nine employees as a group	13,844 <sup>(1)</sup>	10,768	3,076	May 8, 2011	
One hundred and seventy-four employees as a group	423,801 <sup>(2)</sup>	291,519	132,282	May 20, 2011	
One employee	42,868 <sup>(2)</sup>	42,868		July 20, 2011	
One hundred and forty-eight employees as a group	1,170,089 <sup>(2)</sup>	814,764	355,325	March 16, 2012	
Four employees as a group	43,000 <sup>(2)</sup>	10,500	32,500	May 6, 2012	
Three employees as a group	30,000 <sup>(2)</sup>	30,000		August 16, 2012	
Two employees as a group	16,006 <sup>(2)</sup>	16,006		August 17, 2012	
One hundred and forty-one employees as a group	956,437 <sup>(2)</sup>	701,711	254,726	March 9, 2013	
One employee	20,000 <sup>(2)</sup>	20,000		June 16, 2013	
One employee	2,861 <sup>(2)</sup>	2,861		July 16, 2013	
One employee	1,952 <sup>(2)</sup>	488	1,464	July 18, 2013	
Thirteen employees as a group	19,655 <sup>(2)</sup>	17,387	2,268	August 10, 2013	
Seven hundred and forty-eight employees as a group	126,036 <sup>(4)</sup>	126,036		August 11, 2013	
One employee	10,000 <sup>(2)</sup>	5,000	5,000	August 17, 2013	
One employee	20,000 <sup>(2)</sup>	5,000	15,000	September 3, 2013	
One employee	1,739 <sup>(2)</sup>	1,739		October 31, 2013	
Four employees as a group	5,933 <sup>(2)</sup>	4,362	1,571	November 8, 2013	
One employee	1,040 <sup>(2)</sup>	1,040		November 25, 2013	
Hanbing Zhang <sup>(3)</sup>	1,538 <sup>(1)</sup>	1,538		May 8, 2011	
	5,482 <sup>(2)</sup>	5,482		May 20, 2011	
	21,021 <sup>(2)</sup>	21,021		March 16, 2012	
	18,767 <sup>(2)</sup>	18,767		March 9, 2013	
	2,796 <sup>(2)</sup>	2,796		May 4, 2014	
	2,344 <sup>(2)</sup>	1,758		May 3, 2015	May 2, 2025
	4,717 <sup>(2)</sup>	2,358		July 8, 2016	July 7, 2026
	5,275 <sup>(2)</sup>	1,319		May 17, 2017	May 16, 2027
	4,204 <sup>(2)</sup>			May 13, 2018	May 12, 2028
	One hundred and eighty-six employees as a group	207,923 <sup>(2)</sup>	154,869	53,054	May 4, 2014
Three employees as a group	8,574 <sup>(2)</sup>	2,338	6,236	August 7, 2014	
Four employees as a group	17,472 <sup>(2)</sup>	14,244	3,228	August 8, 2014	
One employee	847 <sup>(2)</sup>		847	September 1, 2014	
Three employees as a group	2,112 <sup>(2)</sup>	1,518	594	September 26, 2014	
Six employees as a group	33,956 <sup>(2)</sup>	33,443	513	December 26, 2014	December 25, 2024
Ten employees as a group	109,036 <sup>(2)</sup>	53,812	55,224	January 29, 2015	January 28, 2025
Six employees as a group	68,660 <sup>(2)</sup>	13,731	54,929	January 30, 2015	



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Two hundred and seven employees as a group	145,901 <sup>(2)</sup>	89,989	33,872	May 3, 2015	May 2, 2025
Eighty-four employees as a group	81,838 <sup>(2)</sup>	31,835	45,463	June 15, 2015	June 14, 2025
Three employees as a group	15,535 <sup>(2)</sup>	11,651		June 26, 2015	June 25, 2025
Thirteen employees as a group	56,124 <sup>(2)</sup>	30,572	17,476	September 25, 2015	September 24, 2025
Nine employees as a group	26,169 <sup>(2)</sup>	17,082	3,250	December 24, 2015	December 23, 2025
One employee	10,549 <sup>(2)</sup>	7,912	2,637	April 21, 2016	
Five employees as a group	16,149 <sup>(2)</sup>	10,667	2,888	May 8, 2016	May 7, 2026

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Name	Restricted Share Units Granted	Restricted Share Units Vested	Restricted Share Units Forfeited	Date of Grant	Expiration
Two hundred and thirty-eight employees as a group	443,454 <sup>(2)</sup>	197,439	80,549	July 8, 2016	July 7, 2026
Twenty-three employees as a group	50,243 <sup>(2)</sup>	20,108	14,394	August 8, 2016	August 7, 2026
Five employees as a group	23,654 <sup>(2)</sup>	13,464	4,185	November 6, 2016	November 5, 2026
Twelve employees as a group	44,903 <sup>(2)</sup>	14,395	13,957	March 6, 2017	March 5, 2027
Two hundred and ninety-five employees as a group	715,566 <sup>(2)</sup>	204,585	53,531	May 17, 2017	May 16, 2027
One employee as a group	2,402 <sup>(2)</sup>	600		June 01, 2017	May 30, 2027
Three employees as a group	12,563 <sup>(2)</sup>	3,140		August 7, 2017	August 6, 2027
Nine employees as a group	26,012 <sup>(2)</sup>	6,500	1,696	November 5, 2017	November 4, 2027
Three employees as a group	6,524 <sup>(2)</sup>	1,631		March 11, 2018	March 10, 2028
Three hundred and thirty employees as a group	535,862 <sup>(2)</sup>	2,806	12,766	May 13, 2018	May 12, 2028
Three employees as a group	4,483 <sup>(2)</sup>	431		November 10, 2018	November 9, 2028
<b>Employees as a group</b>	<b>5,637,916</b>	<b>3,095,850</b>	<b>1,264,501</b>		
<b>Total Restricted Share Units</b>	<b>6,808,072</b>	<b>3,820,791</b>	<b>1,264,501</b>		

- (1) Vest over a one-year period from the date of grant.
- (2) Vest over a four-year period from the date of grant.
- (3) The wife of Dr. Shawn Qu, our founder, Chairman, President and Chief Executive Officer.
- (4) Vest immediately upon the date of grant.
- (5) Vest after three years from the date of grant
- (6) Vest over an eight-quarter period from date of grant.

Effective June 23, 2014, we have agreed to grant each of our independent directors, Robert McDermott, Lars-Eric Johansson, Harry E. Ruda, Andrew (Luen Cheung) Wong and Arthur (Lap Tat) Wong, restricted share units quarterly in advance on the first day of July, October, January and April in each year of service. The number of restricted share units granted quarterly is determined by dividing \$30,000 by the average of the closing price of our common shares on each of the five trading days preceding the date of the grant. Each restricted share unit will entitle those directors to receive one of our common shares upon vesting. These restricted share units vest on the earlier of the date that the director ceases to be a member of our board of directors for any reason and three years after the grant date. We agree to issue common shares to those directors as soon as practicable, and in any event within 60 days, after the granted restricted share units vested.

### **C. Board Practices**

In 2018, our board of directors held five meetings and passed 52 resolutions by unanimous written consent.

#### *Terms of Directors and Executive Officers*

Our officers are appointed by and serve at the discretion of our board of directors. Our current directors have not been elected to serve for a specific term and, unless re-elected, hold office until the close of our next annual meeting of shareholders or until such time as their successors are elected or appointed.

#### *Committees of the Board of Directors*

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Our board of directors has established an audit committee, a compensation committee, a nominating and corporate governance committee and a research and development committee. It also established a special committee to consider the Proposed Transaction. For more details on the Proposed Transaction, see "Item 4. Information on the Company A. History and Development of the Company Proposed Going-Private Transaction."

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*Audit Committee*

Our audit committee consists of Messrs. Lars-Eric Johansson, Robert McDermott, Harry E. Ruda, Andrew (Luen Cheung) Wong and Arthur (Lap Tat) Wong and is chaired by Mr. Johansson. Each of Mr. Johansson and Mr. Arthur (Lap Tat) Wong qualifies as an "audit committee financial expert" as required by the SEC. Each of Messrs. McDermott, Ruda and Andrew (Leun Cheung) Wong is "financially literate" as required by the Nasdaq rules. Each of the members of our audit committee satisfies the "independence" requirements of the Nasdaq corporate governance rules. The audit committee oversees our accounting and financial reporting processes and the audits of the financial statements of our company.

The audit committee is responsible for, among other things:

selecting our independent auditors and pre-approving all auditing and non-auditing services permitted to be performed by our independent auditors;

reviewing with our independent auditors any audit problems or difficulties and management's responses;

reviewing and approving all proposed related-party transactions, as defined in Item 404 of Regulation S-K under the Securities Act;

discussing the annual audited financial statements with management and our independent auditors;

reviewing major issues as to the adequacy of our internal controls and any special audit steps adopted in light of material control deficiencies;

annually reviewing and reassessing the adequacy of our audit committee charter;

such other matters that are specifically delegated to our audit committee by our board of directors from time to time;

meeting separately and periodically with management and our internal and independent auditors; and

reporting regularly to the full board of directors.

In 2018, our audit committee held five meetings, and did not pass any resolution by unanimous written consent.

*Compensation Committee*

Our compensation committee consists of Messrs. Lars-Eric Johansson, Robert McDermott, Harry E. Ruda, Andrew (Luen Cheung) Wong and Arthur (Lap Tat) Wong and is chaired by Mr. Andrew (Leun Cheung) Wong. Each of the members of our compensation committee satisfies the "independence" requirements of the Nasdaq corporate governance rules. The compensation committee assists the board in reviewing and approving the compensation structure for our directors and executive officers, including all forms of compensation to be provided to our directors and executive officers. Members of the compensation committee are not prohibited from direct involvement in determining their own compensation. Our chief executive officer may not be present at any committee meeting during which his compensation is deliberated. The compensation committee is responsible for, among other things:

reviewing and approving corporate goals and objectives relevant to the compensation of our chief executive officer, evaluating the performance of our chief executive officer in light of those goals and objectives, and setting the compensation level of our chief executive officer based on this evaluation;



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reviewing and approving the compensation arrangements for our other executive officers and our directors; and

overseeing and periodically reviewing the operation of our employee benefits plans, including bonus, incentive compensation, stock option, pension and welfare plans.

In 2018, our compensation committee held five meetings and did not pass any resolution by unanimous written consent.

*Nominating and Corporate Governance Committee*

Our nominating and corporate governance committee consists of Messrs. Lars-Eric Johansson, Robert McDermott, Harry E. Ruda and, Andrew (Luen Cheung) Wong and Arthur (Lap Tat) Wong and is chaired by Mr. McDermott. Each of the members of our nominating and corporate governance committee satisfies the "independence" requirements of the Nasdaq corporate governance rules. The nominating and corporate governance committee assists the board of directors in identifying individuals qualified to become our directors and in determining the composition of the board and its committees. The nominating and corporate governance committee is responsible for, among other things:

identifying and recommending to the board nominees for election or re-election to the board, or for appointment to fill any vacancy;

reviewing annually with the board the current composition of the board in light of the characteristics of independence, age, skills, experience and availability of service to us;

identifying and recommending to the board the directors to serve as members of the board's committees;

advising the board periodically with respect to significant developments in the law and practice of corporate governance as well as our compliance with applicable laws and regulations, and making recommendations to the board on all matters of corporate governance and on any corrective action to be taken; and

monitoring compliance with our code of business conduct and ethics, including reviewing the adequacy and effectiveness of our procedures to ensure proper compliance.

In 2018, our nominating and corporate governance committee held four meetings and did not pass any resolution by unanimous written consent.

*Research and Development Committee*

Our research and development committee consists of Dr. Harry E. Ruda and Dr. Shawn Qu and is chaired by Dr. Ruda. Dr. Guoqiang Xing, our senior vice president and chief technical officer, is an advisory member of the committee. The research and development committee advises and assists the board of directors and management on matters relating to technology and technological innovation and development as it relates to our solar power business. The research and development committee is responsible for, among other things:

reviewing, evaluating and advising the board of directors and management regarding the quality, scope, direction and effectiveness of our research and development programs and activities;

reviewing, evaluating and advising the board of directors and management regarding our progress in achieving our research and development goals and objectives;

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reviewing, evaluating and making recommendations to the board of directors and management on our internal and external investments in science and technology;

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monitoring, identifying, evaluating and advising the board of directors and management regarding competing solar power technologies and new and emerging developments in solar power science and technology;

reviewing, evaluating and advising the board of directors and our chief executive officer regarding the composition and quality of the research and development team; and

providing general oversight of matters relating to the protection of our intellectual property.

In 2018, our research and development committee held four meetings and did not pass any resolution by unanimous written consent.

*Special Committee*

Our special committee, which is now dissolved, consisted of Messrs. Lars-Eric Johansson, Robert McDermott, Harry E. Ruda and Andrew (Luen Cheung) Wong and was chaired by Mr. McDermott. Each of the members of the special committee satisfied the "independence" requirements of the Nasdaq corporate governance rules and was disinterested in the Proposed Transaction. The special committee is responsible for, among other things:

reviewing and assessing the Proposed Transaction;

considering whether there are alternative transactions to the Proposed Transaction and, if so, reviewing and assessing each alternative transaction; and

determining whether to pursue the Proposed Transaction or one or more alternative transactions or to maintain our current *status quo* as a public company and reject the Proposed Transaction or any alternative transaction.

In 2018, our special committee held 12 meetings and did not pass any resolution by unanimous written consent.

*Interested Transactions*

Under the CBCA, a director or officer of a corporation who is a party to a material contract or transaction or proposed material contract or transaction with the corporation, or is a director or officer (or an individual acting in a similar capacity) of, or has a material interest in, any person who is party to such a contract or transaction, is required to disclose to the corporation in writing or request to have entered into the minutes of meetings of directors the nature and extent of his or her interest in accordance with the requirements of the CBCA. A director may vote on any resolution in respect of such contract or transaction only if the contract or transaction is: (a) one relating primarily to remuneration as a director, officer, employee or agent of the corporation or an affiliate; (b) one for indemnity or insurance in favor of directors and officers in compliance with the CBCA; or (c) one with an affiliate.

In 2018, we did not enter into any interested transactions other than those described in this "Item 6. Directors, Senior Management and Employees" and "Item 7. Major Shareholders and Related Party Transactions B. Related Party Transactions."

*Remuneration and Borrowing*

Our directors may determine the remuneration to be paid to them. The compensation committee will assist the directors in reviewing and approving the compensation structure for our directors. Our directors may, without authorization of the shareholders (a) borrow money on our credit, (b) issue, reissue, sell, pledge or hypothecate debt obligations of ours, (c) give a guarantee on our behalf to secure performance of an obligation of any person, and (d) mortgage, hypothecate, pledge or otherwise



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create a security interest in all or any property of ours, owned or subsequently acquired, to secure any obligation of ours.

***Qualification***

Each of our independent directors is asked to hold common shares and/or restricted share units having a value which is at least five times the director's annual cash retainer and to satisfy this requirement before the later of July 1, 2017 and three years after he or she becomes a director.

***Employment Agreements***

We have entered into employment agreements with each of our executive officers.

All of the employment agreements with our executive officers are for an indefinite term. Under the employment agreements, we may terminate an executive officer's employment at any time for cause without notice and for any other reason by giving written notice of termination to the executive officer. An executive officer may terminate his employment at any time by giving 30- or 60- days' notice of termination to us. If we terminate an executive officer's employment for any reason other than cause, or the executive officer terminates his employment for good reason, the executive officer is entitled to continue to receive his salary for a period of six or twelve months following the termination of his employment provided that he continues to comply with his confidentiality, inventions and non-competition obligations described below.

Each executive officer has agreed not to disclose or use, directly or indirectly, any of our confidential information, including trade secrets and information concerning our finances, employees, technology, processes, facilities, products, suppliers, customers and markets, except in the performance of his duties and responsibilities or as required pursuant to applicable law. Each executive officer has also agreed to disclose in confidence to us all inventions, designs and trade secrets which he may conceive, develop or reduce to practice during his employment and to assign all right, title and interest in them to us. Finally, each executive officer has agreed that he will not, directly or indirectly, during and within one year after the termination of his employment:

communicate or have any dealings with our customers or suppliers that would be likely to harm the our business relationship with them;

provide services, whether as a director, officer, employee, independent contractor or otherwise, to a competitor or acquire or hold any interest in, whether as a shareholder, partner or otherwise, in a competitor provided that the executive officer may hold up to 5% of the outstanding shares or other securities of a competitor that is listed on a securities exchange or recognized securities market; and

approach solicit, whether by offer of employment or otherwise, the services of any of our employees.

Our compensation committee is required to approve all employment agreements entered into by us with any employee whose base salary is equal to or greater than \$150,000.

***Director Agreements***

We have entered into director agreements with our independent directors, pursuant to which we make payments in the form of an annual cash retainer, payable quarterly, and quarterly grants of restricted share units to our independent directors for their services. See " B. Compensation of Directors and Executive Officers."

Table of Contents***Indemnification of Directors and Officers***

Under the CBCA and pursuant to our by-laws, we may indemnify any present or former director or officer or an individual who acts or has acted at our request as a director or officer, or an individual acting in a similar capacity, of another corporation or entity, against all costs, charges and expenses, including an amount paid to settle an action or satisfy a judgment, reasonably incurred by such individual in respect of any civil, criminal, administrative, investigative or other proceeding in which the individual is involved because of that association with us or other entity, provided that the director or officer acted honestly and in good faith with a view to our best interests, or, as the case may be, to the best interests of the other entity for which he or she acted as a director or officer or in a similar capacity at our request, and, in the case of a criminal or administrative action or proceeding that is enforced by a monetary penalty, had reasonable grounds for believing that his or her conduct was lawful. Such indemnification may be made in connection with a derivative action only with court approval. A director or officer is entitled to indemnification from us as a matter of right if the court or other competent authority has judged that he or she has not committed any fault or omitted to do anything that the individual ought to have done and fulfilled the conditions set forth above.

We have entered into indemnity agreements with each of our directors agreeing to indemnify them, to the fullest extent permitted by law, against all liability, loss, harm damage cost or expense, reasonably incurred by the director in respect of any threatened, pending, ongoing or completed claim or civil, criminal, administrative, investigative or other action or proceeding made or commenced against him or in which he is or was involved by reason of the fact that he is or was a director of our company.

Our directors and officers are covered by directors' and officers' insurance policies.

**D. Employees**

As of December 31, 2016, 2017 and 2018, we had 9,724, 12,129 and 12,442 full-time employees, respectively. The following table sets forth the number of our employees categorized by our areas of operations and as a percentage of our workforce as of December 31, 2018.

<b>As of December 31, 2018</b>		
	<b>Number of Employees</b>	<b>Percentage of Total</b>
Manufacturing	9,867	79.3%
General and administrative	1,138	9.1%
Research and development	572	4.6%
Sales and marketing	865	7.0%
<b>Total</b>	<b>12,442</b>	<b>100%</b>

As of December 31, 2018, we had 2,744 employees at our facilities in Suzhou, 2,099 employees at our facilities in Changshu, 2,428 employees at our facilities in Luoyang, 2,314 employees at our facilities in Yancheng, 365 employees at our facilities in Baotou and 2,492 employees based in our facilities and offices in Canada, Japan, Australia, Singapore, South Korea, Hong Kong, Taiwan, India, Indonesia, Thailand, Vietnam, Brazil, United Arab Emirates, South Africa, the Americas and the EU (which includes Germany, Italy, United Kingdom and Spain). Our employees are not covered by any collective bargaining agreement. We consider our relations with our employees to be good. From time to time, we also employ or engage part-time employees or independent contractors to support our manufacturing, research and development and sales and marketing activities. We plan to hire additional employees as we expand.

Table of Contents**E. Share Ownership**

The following table sets forth information with respect to the beneficial ownership of our common shares as of March 31, 2019, the latest practicable date, by:

each of our directors and executive officers; and

each person known to us to own beneficially more than 5% of our common shares.

The calculations in the table below are based on the 59,260,745 common shares outstanding, as of March 31, 2019.

Beneficial ownership is determined in accordance with the rules and regulations of the SEC. In computing the number of shares beneficially owned by a person and the percentage ownership of that person, we have included shares that the person has the right to acquire within 60 days from March 31, 2019, including through the vesting of any restricted share unit, the exercise of any option, warrant or other right or the conversion of any other security. These shares, however, are not included in the computation of the percentage ownership of any other person.

	Shares Beneficially Owned <sup>(1)</sup>	
	Number	%
<b>Directors and Executive Officers:<sup>(2)</sup></b>		
Shawn (Xiaohua) Qu <sup>(3)</sup>	13,887,085	23.4%
Robert McDermott <sup>(4)</sup>	55,405	*
Lars-Eric Johansson <sup>(5)</sup>	37,666	*
Harry E. Ruda <sup>(6)</sup>	24,872	*
Guangchun Zhang <sup>(7)</sup>	11,519	*
Yan Zhuang <sup>(8)</sup>	11,519	*
Arthur (Jian) Chien <sup>(9)</sup>	10,141	*
Huifeng Chang <sup>(10)</sup>	25,639	*
Jianyi Zhang <sup>(11)</sup>	29,635	*
Guoqiang Xing <sup>(12)</sup>	21,082	*
All Directors and Executive Officers as a Group	14,114,563	23.7%
<b>Principal Shareholders</b>		
JPMorgan Chase & Co <sup>(13)</sup>	3,217,335	5.4%

\*

The person beneficially owns less than 1% of our outstanding shares.

- (1) Beneficial ownership is determined in accordance with Rule 13d-3 of the General Rules and Regulations under the Exchange Act, and includes voting or investment power with respect to the securities.
- (2) The business address of our directors and executive officers is 545 Speedvale Avenue West, Guelph, Ontario, Canada N1K 1E6.
- (3) Comprises 13,782,242 common shares directly held by Dr. Shawn Qu and Hanbing Zhang, the wife of Dr. Shawn Qu, 63,291 common shares issuable upon the exercise of options held by Dr. Shawn Qu and Ms. Zhang within 60 days from March 31, 2019, 41,552 shares issuable upon vesting of restricted share units held by Dr. Shawn Qu and Ms. Zhang within 60 days from March 31, 2019.
- (4) Comprises 7,233 common shares directly held by Mr. McDermott and 46,600 common shares issuable upon exercise of options held by Mr. McDermott within 60 days from March 31, 2019, and 1,572 shares issuable upon vesting of restricted share units held by Mr. McDermott within 60 days from March 31, 2019.



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- (5) Comprises 12,794 common shares directly held by Mr. Johansson and 23,300 common shares issuable upon exercise of options held by Mr. Johansson within 60 days from March 31, 2019, and 1,572 shares issuable upon vesting of restricted share units held by Mr. Johansson within 60 days from March 31, 2019.
- (6) Comprises 23,300 common shares issuable upon exercise of options held by Mr. Ruda within 60 days from March 31, 2019, and 1,572 shares issuable upon vesting of restricted share units held by Mr. Ruda within 60 days from March 31, 2019.
- (7) Comprises 11,519 common shares issuable upon vesting of restricted shares units held by Mr. Zhang within 60 days from March 31, 2019.
- (8) Comprises 11,519 common shares issuable upon vesting of restricted share units held by Mr. Zhuang within 60 days from March 31, 2019.
- (9) Comprises 10,141 common shares issuable upon vesting of restricted shares units held by Mr. Chien within 60 days from March 31, 2019.
- (10) Comprises 15,498 common shares directly held by Mr. Chang and 10,141 shares issuable upon vesting of restricted share units held by Mr. Chang within 60 days from March 31, 2019.
- (11) Comprises 19,494 common shares directly held by Mr. Zhang and 10,141 shares issuable upon vesting of restricted share units held by Mr. Zhang within 60 days from March 31, 2019.
- (12) Comprises 12,626 shares directly held by Mr. Xing and 8,456 shares issuable upon vesting of restricted share units held by Mr. Xing within 60 days from March 31, 2019.
- (13) Represents 3,217,335 common shares held by JPMorgan Chase & Co, as reported on Schedule 13G filed by JPMorgan Chase & Co on February 12, 2019. The percentage of beneficial ownership was calculated based on the total number of our common shares as of March 31, 2019. The principal business address of JPMorgan Chase & Co is 270 Park Avenue, New York, NY 10017.

None of our shareholders have different voting rights from other shareholders as of the date of this annual report on Form 20-F. We are currently not aware that we are directly or indirectly owned or controlled by another corporation, by any foreign government or by any other natural or legal person severally or jointly and we are currently not aware of any arrangement that may, at a subsequent date, result in a change of control of our company, other than the proposed going private transaction disclosed in "Item 4. Information on the Company History and Development of the Company."

### **ITEM 7. MAJOR SHAREHOLDERS AND RELATED PARTY TRANSACTIONS**

#### **A. Major Shareholders**

Please refer to "Item 6. Directors, Senior Management and Employees E. Share Ownership."

#### **B. Related Party Transactions**

##### ***Guarantees and Loans***

Dr. Shawn Qu, our Chairman, President and Chief Executive Officer, fully guaranteed one-year loan facilities from Chinese commercial banks of RMB896 million (\$129 million), RMB1,346 million (\$206 million) and RMB730 million (\$106 million) in 2016, 2017 and 2018, respectively. Amounts drawn down under the facilities as at December 31, 2016, 2017 and 2018 were \$79.6 million, \$135.2 million and \$65.2 million, respectively.



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Dr. Shawn Qu, fully guaranteed two-year loan facilities from a Chinese commercial bank of RMB540 million (\$79 million) in 2018. Amounts drawn down from the facilities as at December 31, 2018 was \$20.7 million.

We granted 121,951, 77,289 and 83,805 restricted share units to Dr. Shawn Qu in 2016, 2017 and 2018, respectively, on account of his having guaranteed these loan facilities.

***Sales and purchase contracts with affiliates***

In 2018, we sold five solar power projects to CSIF, our 14.66% owned affiliate in Japan, in the amount of JPY12,276 million (\$109.6 million) recorded in revenue and JPY89.2 million (\$0.8 million) recorded in other operating income, respectively.

In 2018, we provided asset management services to CSIF in the amount of JPY247.3 million (\$2.2 million).

In 2018, we provided O&M services to CSIF in the amount of JPY122.5 million (\$1.1 million).

In 2018, we sold solar power products to ET Solutions South Africa 1 Pty, our 49% owned affiliate in South Africa, in the amount of RMB45.4 million (\$6.9 million).

In 2018, we purchased raw materials from Suzhou iSilver Materials Co., Ltd., our 14.63% owned affiliate in China, in the amount of RMB512.2 million (\$74.5 million).

In 2018, we purchased equipment from Suzhou Kzone Equipment Technology Co., Ltd., our 32% owned affiliate in China, in the amount of RMB41.6 million (\$6.1 million).

***Employment Agreements***

See "Item 6. Directors, Senior Management and Employees C. Board Practices Employment Agreements."

***Share Incentive Plan***

See "Item 6. Directors, Senior Management and Employees B. Compensation of Directors and Executive Officers Share-based Compensation Share Incentive Plan."

**C. Interests of Experts and Counsel**

Not applicable.

**ITEM 8. FINANCIAL INFORMATION**

**A. Consolidated Statements and Other Financial Information**

We have appended audited consolidated financial statements filed as part of this annual report.

***Legal and Administrative Proceedings***

***Class Action Lawsuits***

In January 2015, the plaintiff in a class action lawsuit filed against us and certain of our executive officers in the Ontario Superior Court of Justice obtained an order for class certification in respect of certain claims for which he had obtained leave in September 2014 to assert the statutory cause of action for misrepresentation under the Ontario Securities Act, for certain negligent misrepresentation claims and for oppression remedy claims advanced under the CBCA. The Court dismissed our application for leave to appeal and the class action is at the merits stage. The common issues trial is

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scheduled for October 2019. We believe the Ontario action is without merit and we are defending it vigorously.

*LDK*

In July 2010, CSI Cells, one of our wholly-owned subsidiaries, filed a request for arbitration against LDK with Shanghai International Economy and Trade Arbitration Commission, formerly known as CIETAC Shanghai Branch, in relation to wafer supply contracts we entered into with LDK in October 2007, or the 2007 Supply Contract, and in June 2008, or the 2008 Supply Contracts. In December 2012, CIETAC Shanghai Branch awarded RMB248.9 million in compensation plus RMB2.32 million in arbitration expenses to LDK for the damages LDK claimed to have suffered from the alleged breaches by us of the 2007 Supply Contract and 2008 Supply Contracts between July 2009 and September 2010, or the 2012 Arbitral Award.

In February 2013, LDK filed for enforcement of the 2012 Arbitral Award with the Jiangsu Suzhou Intermediate People's Court, or the Suzhou Intermediate Court. In 2013, LDK initiated two separate proceedings against us in the Jiangxi Xinyu Intermediate People's Court, or the Xinyu Intermediate Court, claiming that we had forfeited our rights to the initial deposits under the 2007 Supply Contract and 2008 Supply Contracts because of the alleged breaches under these contracts. On October 18, 2013, the Xinyu Intermediate Court stayed these proceedings pending the decision by the Suzhou Intermediate Court as to the 2012 Arbitral Award. On September 9, 2015, the Suzhou Intermediate Court ruled in favor of LDK. On October 19, 2015, we reached a settlement agreement with LDK, or the 2015 Settlement Agreement. Under the 2015 Settlement Agreement, we agreed to pay RMB132.7 million to LDK and to purchase 64.3 million pieces of silicon wafers from LDK at market price over a three year period starting in or around December 2015, in exchange for which LDK (a) would release us from the 2012 Arbitration Award and waive its rights and claims thereunder and (b) would withdraw its complaints from the Xinyu Intermediate Court and terminate such proceedings. The Suzhou Intermediate Court reviewed the 2015 Settlement Agreement and terminated the enforcement proceeding relating to the 2012 Arbitral Award.

On May 19, 2016, we received a copy of a bill of complaint from the Xinyu Intermediate Court, in which LDK's receiver applied to the court for an order to revoke the 2015 Settlement Agreement pursuant to PRC bankruptcy law, and requested us to pay an amount that had been waived by LDK under the 2015 Settlement Agreement. In May 2017, the Xinyu Intermediate Court made a judgment in favor of LDK's receiver, revoking the 2015 Settlement Agreement and requiring us to pay RMB 58.5 million to LDK's receiver and bear court expenses at RMB 0.8 million. We recorded a \$8.6 million provision in the first quarter of 2017 and we appealed the judgment. In November 2017, the Jiangxi High People's Court, or the Jiangxi High Court, dismissed our appeal and upheld the original judgment. We then appealed this judgment to the Supreme People's Court of The People's Republic of China, or the Supreme Court. In January 2018, the Supreme Court put our appeal on record pending examination but later dismissed our request for retrial. In March 2018, LDK's receiver applied to the Xinyu Intermediate Court for compulsory execution of its judgment. In April 2018, the Xinyu Intermediate Court deducted RMB59.5 million from our accounts for the execution of its judgment.

*U.S. Antidumping and Countervailing Duty Proceedings*

*Solar 1*

On October 17, 2012, the United States Department of Commerce, or USDOC, issued final affirmative determinations with respect to its antidumping and countervailing duty investigations on crystalline silicon photovoltaic, or CSPV, cells, whether or not incorporated into modules, from China. On November 30, 2012, the U.S. International Trade Commission, or USITC, determined that imports



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of CSPV cells had caused material injury to the U.S. CSPV industry. The USITC's determination was subsequently affirmed by the U.S. Court of International Trade, or CIT, and the U.S. Court of Appeals for the Federal Circuit, or Federal Circuit.

As a result of these determinations, we were required to pay cash deposits on Chinese-origin CSPV cells imported into the U.S., whether or not incorporated into modules. The rates applicable to our company were 13.94% (antidumping duty) and 15.24% (countervailing duty). We paid all the cash deposits due under these determinations. Several parties challenged the determinations of the USITC in appeals to the CIT. On August 7, 2015, the CIT sustained the USITC's final determination and on January 22, 2018, the Federal Circuit upheld the CIT's decision. There was no further appeal to the U.S. Supreme Court and, therefore, this decision is final.

The rates at which duties will be assessed and payable are subject to administrative reviews.

The USDOC published the final results of the first administrative reviews in July 2015. As a result of these decisions, the duty rates applicable to us were revised to 9.67% (antidumping duty) and 20.94% (countervailing duty). The assessed rates were appealed to the CIT. The CIT affirmed the USDOC's countervailing duty rates, and no change was made to our countervailing duty rate. This decision by the CIT was not appealed to the Federal Circuit. The CIT likewise affirmed USDOC's antidumping duty rates, and no change was made to our antidumping duty rate. This decision by the CIT was, however, appealed to the Federal Circuit, which upheld the CIT's decision. There was no further appeal to the U.S. Supreme Court and, therefore, this decision is final.

The USDOC published the final results of the second administrative reviews in June 2016 (antidumping duty) and July 2016 (countervailing duty). As a result of these decisions, the antidumping duty rate applicable to us was reduced to 8.52% (from 9.67%) and then to 3.96% (from 8.52%). Because we were not subject to the second administrative review of the countervailing duty order, our countervailing duty rate remained at 20.94%. The antidumping duty rates were appealed to the CIT. The CIT affirmed the USDOC's second antidumping duty rate. This decision by the CIT was appealed to the Federal Circuit, with a decision expected in late 2019.

The USDOC published the final results of the third administrative reviews in June 2017 (antidumping duty) and July 2017 (countervailing duty), and later amended in October 2017. As result of these decisions, the duty rates applicable to us were changed to 13.07% (from 8.52%) (antidumping duty) and 18.16% (from 20.94%) (countervailing duty). The assessed rates were appealed to the CIT. The CIT has remanded the countervailing duty appeal to the USDOC to consider adjustments to our rate. The CIT will review any adjustments made by the USDOC to our rate and issue a ruling, which is expected later in 2019. A decision on the assessed antidumping rate is expected in mid-2019.

The USDOC published the final results of the fourth administrative reviews in July 2018 (both antidumping duty and countervailing duty), with the countervailing duty rate later amended in October 2018. Because we were not subject to the fourth administrative review of the antidumping duty order, our antidumping duty rate remains at 13.07%. Because of these decisions, the countervailing duty rate applicable to us was reduced to 11.59% (from 18.16%). The countervailing duty rates were appealed to the CIT. A decision on this appeal is not expected until late 2019 or 2020.

The fifth and sixth administrative reviews are ongoing and are expected to conclude in mid-2019 and mid-2020, respectively. In the fifth administrative reviews, the USDOC has assessed us at a preliminary antidumping duty rate of 44.25% (up from 13.07%) and a preliminary countervailing duty rate of 16.46% (up from 11.59%). We are vigorously contesting these rates in the final phase of the review. The final results of the fifth and sixth administrative reviews may result in duty rates that differ from the previous duty rates and cash deposit rates applicable to us. These duty rates could materially and adversely affect our U.S. import operations and increase our cost of selling into the U.S.

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Between 2017 and 2019, the USDOC and USITC conducted five-year sunset reviews and determined to continue the Solar 1 antidumping and countervailing duty orders. In March 2018, the USDOC published the results of its expedited first sunset reviews and concluded that revocation of the Solar 1 orders would likely lead to a continuation or recurrence of dumping and a countervailable subsidy. We did not participate in USDOC's first sunset review. We did, however, participate in the USITC's first sunset review and requested that the Solar 1 duties be revoked. The USITC issued an affirmative determination in March 2019 declining to revoke the Solar 1 orders and finding that such revocation would be likely to lead to a continuation or recurrence of material injury to the U.S. industry within a reasonably foreseeable time. As a result, the Solar 1 orders remain in effect.

*Solar 2*

On December 31, 2013, SolarWorld Industries America, Inc. filed a new trade action with the USDOC and the USITC accusing Chinese producers of certain CSPV modules of dumping their products into the U.S. and of receiving countervailable subsidies from the Chinese authorities. This trade action also alleged that Taiwanese producers of certain CSPV cells and modules dumped their products into the U.S. Excluded from these new actions were those Chinese-origin solar products covered by the Solar 1 orders described above. We were identified as one of a number of Chinese producers exporting the Solar 2 subject goods to the U.S. market.

"Chinese CSPV products subject to Solar 2 orders" refer to CSPV products manufactured in mainland China using non-Chinese (e.g., Taiwanese) CSPV cells and imported into the U.S. during the investigation or administrative review periods of Solar 2. "Taiwanese CSPV products subject to Solar 2 orders" refer to CSPV products manufactured outside of mainland China using Taiwanese CSPV cells and imported into the U.S. during the investigation or review periods of Solar 2.

On December 23, 2014, the USDOC issued final affirmative determinations with respect to its antidumping and countervailing duty investigation on these CSPV products. On January 21, 2015, the USITC determined that imports of these CSPV products had caused material injury to the U.S. CSPV industry. As a result of these determinations, we are required to pay cash deposits on these CSPV products, the rates of which applicable to our Chinese CSPV products were 30.06% (antidumping duty) and 38.43% (countervailing duty). The cash deposit rate applicable to our Taiwanese CSPV products subject to Solar 2 orders varied by solar cell producer. We paid all the cash deposits due under these determinations.

The USDOC's determination and the assessed countervailing duty rates were appealed to the CIT and the Federal Circuit. In March 2019, the Federal Circuit affirmed the CIT's decision confirming the USDOC's determination but reduced our countervailing duty rate to 33.58% (from 38.43%). There was no further appeal to the U.S. Supreme Court and, therefore, this decision is final.

The rates at which duties will be assessed and payable are subject to administrative reviews.

The USDOC published the final results of the first administrative reviews in July 2017 (China and Taiwan antidumping duty orders) and September 2017 (China-only countervailing duty order). Because we were not subject to the first administrative reviews of the Chinese orders of Solar 2, our duty rates will remain at 30.06% (antidumping duty) and 33.58% (countervailing duty) for our Chinese CSPV products. Our duty rates for our Taiwanese CSPV products range from 3.56% to 4.20%.

The second administrative reviews for the Chinese antidumping and countervailing duty orders were rescinded, meaning that there is no change in the Chinese antidumping and countervailing duty rates applicable to our Chinese CSPV products 30.06% (antidumping duty) and 33.58% (countervailing duty). There is no countervailing duty order on Taiwan Solar 2 products. The USDOC published final results of the second administrative review for the Taiwanese antidumping duty order (there is no

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countervailing duty order) in June 2018. The rate applicable to us is 1.33%. There is no ongoing litigation related to the Taiwanese antidumping duty rate.

We are not subject to the third administrative reviews of the Chinese orders and, therefore, our duty rates will remain unchanged at 30.06% (antidumping duty) and 33.58% (countervailing duty) for our Chinese CSPV products. There is no countervailing duty order on Taiwan Solar 2 products. The third administrative review of the Taiwanese antidumping order is ongoing and is expected to conclude in mid-2019. The final results for this review could result in a new cash deposit rate for us, which may differ from our current cash deposit rate.

The USDOC is expected to initiate the fourth administrative reviews of the Chinese and Taiwanese orders soon.

*Section 201*

On May 17, 2017, following receipt of a petition from Suniva, Inc., which was later joined by SolarWorld Americas, Inc., the USITC instituted a safeguard investigation to determine whether there were increased imports of CSPV products in such quantities as to be a substantial cause of serious injury, or the threat thereof, to the domestic industry producing like or directly competitive products. On September 22, 2017, the USITC determined that CSPV products are being imported into the United States in such increased quantities as to be a substantial cause of serious injury to the domestic industry.

On January 23, 2018, the President of the United States imposed a safeguard measure on imports of CSPV cells, whether or not partially or fully assembled into other products such as modules, consisting of (1) a tariff-rate quota for four years on imports of CSPV cells not partially or fully assembled into other products, with (a) an in-quota quantity of 2.5 gigawatts, and (b) a tariff rate applicable to over-quota CSPV cells of 30%, declining annually by five percentage points to 25% in the second year, 20% in the third year, and 15% in the fourth year; and (2) a 30% tariff for four years on CSPV modules, declining annually by five percentage points to 25% in the second year, 20% in the third year, and 15% in the fourth year. This safeguard measure, which became effective on February 7, 2018, applies to CSPV products imported from all countries, except for certain developing country members of the World Trade Organization.

The safeguard measure may be reduced, modified, or eliminated during the mid-term review, which should take place in 2019 and 2020, as required by U.S. law. The USITC must prepare a report for provision to the President and the Congress by no later than February 7, 2020. The USITC report must address the domestic industry's adjustment efforts and progress by workers and firms to adjust to import competition. The President is then required to consider the USITC's views but is not required to take any action. The President has the authority to reduce, modify, or terminate the safeguard measures if the President determines that (1) the effectiveness of the safeguard action has been impaired by changed economic circumstances, or (2) the domestic industry has not made adequate efforts to make a positive adjustment to import competition. Alternatively, if a majority of the domestic industry petitions the President that the domestic industry has made a positive adjustment to import competition, then the President may likewise reduce, modify, or terminate the safeguard measures.

On February 9, 2018, Canadian Solar and two other manufacturers and exporters of CSPV modules from Canada challenged the applicability of the safeguard measure to U.S. imports of CSPV modules from Canada. The Canadian parties applied to the CIT for a temporary restraining order and preliminary injunction (TRO/PI) to halt the imposition of the 30% tariff on CSPV modules imported from Canada. The CIT denied the application in March 2018, and on June 15, 2018, the Federal Circuit affirmed the CIT's decision.

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*European Antidumping and Anti-Subsidy Investigations*

On September 6, 2012, following a complaint lodged by EU ProSun, an ad-hoc industry association of EU CSPV module, cell and wafer manufacturers, the European Commission initiated an antidumping investigation concerning EU imports of CSPV modules and key components (i.e., cells and wafers) originating in China. On November 8, 2012, following a complaint lodged by the same parties, the European Commission initiated an anti-subsidy investigation on these same products. On December 6, 2013, the EU imposed definitive antidumping and countervailing measures on imports of CSPV modules and key components (i.e., cells and wafers) originating in or consigned from China. On March 3, 2017, the European Commission extended the antidumping and countervailing measures for 18 months on imports of CSPV modules and key components (i.e., cells and wafers) originating in or consigned from China. On September 16, 2017, the European Commission amended the form of the antidumping and countervailing measures for certain Chinese exporters (but not for Canadian Solar). On March 9, 2018, the antidumping and countervailing measures expired. As a result, since then, our CSPV modules and cells that originate in, or are consigned from, China, are no longer subject to antidumping or countervailing measures.

On February 28, 2014, we filed separate actions with the General Court of the EU for annulment of the regulation imposing the definitive antidumping measures and of the regulation imposing the definitive countervailing measures (case T-162/14 and joined cases T-158/14, T-161/14, and T-163/14). The General Court rejected these actions for annulment. On May 8, 2017, we appealed the judgements of the General Court before the Court of Justice of the EU (cases C-236/17 and C-237/17). On March 27, 2019, the Court of Justice rejected the appeals.

*Canadian Antidumping and Countervailing Duties Investigation*

On June 3, 2015, the Canada Border Services Agency released final determinations of dumping and subsidization which found dumping calculated by way of a Ministerial Specification based on a Non Market Economy finding applicable to all cooperative exporters and ascertained a Canadian Solar-specific subsidies rate of RMB0.014 per Watt. On July 3, 2015 the Canadian International Trade Tribunal determined that a Canadian industry was not negatively affected as a result of imported modules but was threatened with negative impact. As a result of these findings, definitive duties were imposed on imports of Chinese solar modules into Canada starting on July 3, 2015. We do not believe the imposition of these duties will have a material negative effect upon our results of operations because we have significant module manufacturing capacity in Ontario and do not rely on Chinese solar modules to serve our Canadian business.

*Dividend Policy*

We have never declared or paid any dividends on our common shares, nor do we have any present plan to declare or pay any dividends on our common shares in the foreseeable future. We currently intend to retain our available funds and any future earnings to operate and expand our business.

Our board of directors has complete discretion on whether to pay dividends, subject only to the requirements of the CBCA. Even if our board of directors decides to pay dividends, the form, frequency and amount will depend upon our future operations, earnings, capital requirements, surplus, general financial condition, contractual restrictions, and other factors that our board of directors may deem relevant.

**B. Significant Changes**

Between January 1, 2019 and March 31, 2019, an additional 80,121 restricted share units granted under the Plan vested.

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Except as described above, we have not experienced any significant changes since the date of our audited consolidated financial statements included in this annual report.

**ITEM 9. THE OFFER AND LISTING**

**A. Offering and Listing Details**

Not applicable.

**B. Plan of Distribution**

Not applicable.

**C. Markets**

Our common shares have been listed on the Nasdaq since November 9, 2006 under the symbol "CSIQ."

**D. Selling Shareholders**

Not applicable.

**E. Dilution**

Not applicable.

**F. Expenses of the Issue**

Not applicable.

**ITEM 10. ADDITIONAL INFORMATION**

**A. Share Capital**

Not applicable.

**B. Memorandum and Articles of Association**

We incorporate by reference into this annual report the description of our Amended Articles of Continuance, as amended, contained in our F-1 registration statement (File No. 333-138144), as amended, initially filed with the SEC on October 23, 2006.

**C. Material Contracts**

We have not entered into any material contracts other than in the ordinary course of business and other than those described in "Item 4. Information on the Company" or elsewhere in this annual report on Form 20-F.

**D. Exchange Controls**

See "Item 4. Information on the Company B. Business Overview Government Regulations Foreign Currency Exchange" and "Item 4. Information on the Company B. Business Overview Government Regulations Dividend Distribution."

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**E. Taxation**

*Principal Canadian Federal Tax Considerations*

*General*

The following is a summary of the principal Canadian federal income tax implications generally applicable to a U.S. Holder (defined below), who holds or acquires our common shares, or the Common Shares, and who, at all relevant times, for purposes of the Income Tax Act (Canada), or the Canadian Tax Act, (i) is the beneficial owner of such Common Shares; (ii) has not been, is not and will not be resident (or deemed to be resident) in Canada at any time while such U.S. Holder has held or holds the Common Shares; (iii) holds the Common Shares as capital property; (iv) deals at arm's length with and is not affiliated with us; (v) does not use or hold, and is not deemed to use or hold, the Common Shares in the course of carrying on a business in Canada, (vi) is not part of a transaction or event or series of transactions or events that includes the acquisition or holding of Common Shares so as to cause the foreign affiliate dumping rules in section 212.3 of the Canadian Tax Act to apply; (vii) is not a "specified shareholder" of us as defined subsection 18(5) of the Canadian Tax Act; (viii) is not a financial institution, specified financial institution, partnership or trust as defined in the Canadian Tax Act; (ix) is a resident of the United States for purposes of the Canada United States Income Tax Convention (1980), or the Convention, and is fully entitled to the benefits of the Convention; and (x) has not, does not and will not have a fixed base or permanent establishment in Canada within the meaning of the Convention at any time when such U.S. Holder has held or holds the Common Shares, or a U.S. Holder. Special rules that are not addressed in this summary may apply to a U.S. Holder that is an insurer that carries on, or is deemed to carry on, an insurance business in Canada and elsewhere or that is an authorized foreign bank as defined in the Canadian Tax Act and such U.S. Holders should consult their own tax advisers.

This summary assumes that we are a resident of Canada for the purposes of the Canadian Tax Act. Should it be determined that we are not a resident of Canada for the purposes of the Canadian Tax Act by virtue of being resident in another country (such as the PRC) by virtue of the application of an income tax convention between Canada and that other country, the Canadian income tax consequences to a U.S. Holder will differ from those described herein and U.S. Holders should consult their own tax advisers.

This summary is based on the current provisions of the Canadian Tax Act, and the regulations thereunder, the Convention, and our counsel's understanding of the published administrative practices and policies of the Canada Revenue Agency, all in effect as of the date of this annual report on Form 20-F. This summary takes into account all specific proposals to amend the Canadian Tax Act or the regulations thereunder publicly announced by or on behalf of the Minister of Finance (Canada) prior to the date of this annual report on Form 20-F. No assurances can be given that such proposed amendments will be enacted in the form proposed, or at all. This is not an exhaustive summary of all potential Canadian federal income tax consequences to a U.S. Holder and this summary does not take into account or anticipate any other changes in law or administrative practices, whether by judicial, governmental or legislative action or decision, nor does it take into account provincial, territorial or foreign tax legislation or considerations, which may differ from the Canadian federal income tax considerations described herein.

The Canadian federal income tax consequences of purchasing, owning and disposing of Common Shares will depend on each U.S. Holder's particular situation. This summary is not intended to be a complete analysis of or description of all potential Canadian federal income tax consequences, and should not be construed to be, legal, business or tax advice directed at any particular U.S. Holder or prospective purchaser of Common Shares. Accordingly, U.S. Holders or prospective purchasers of Common Shares should consult their own tax advisers for advice with respect to the Canadian federal income tax consequences of an investment in Common Shares based on their own particular circumstances.

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*Dividends*

Amounts paid or credited, or deemed under the Canadian Tax Act to be paid or credited, on account or in lieu of payment of, or in satisfaction of, dividends to a U.S. Holder that has provided the requisite documentation regarding its entitlement to benefits under the Convention will be subject to Canadian non-resident withholding tax at the reduced rate of 15% under the Convention. This rate is further reduced to 5% in the case of a U.S. Holder that is a company for purposes of the Convention that owns at least 10% of our voting shares at the time the dividend is paid or deemed to be paid.

*Disposition of Our Common Shares*

A U.S. Holder will not be subject to income tax under the Canadian Tax Act in respect of any capital gain realized on a disposition or deemed disposition of its Common Shares unless, at the time of disposition, the Common Shares constitute "taxable Canadian property" of the U.S. Holder for the purposes of the Canadian Tax Act and the U.S. Holder is not otherwise entitled to an exemption under the Convention.

Generally, a Common Share owned by a U.S. Holder will not be taxable Canadian property of the U.S. Holder at a particular time provided that, at that time, the common shares of our company are listed on a designated stock exchange (which currently includes the Nasdaq), unless at any time in the previous 60 month period:

the U.S. Holder and persons with whom the U.S. Holder does not deal at arm's length alone or in any combination has owned 25% or more of the shares of any class or series of shares in the capital of our company, and

more than 50% of the fair market value of the Common Shares is derived directly or indirectly from one or any combination of real or immovable property situated in Canada, Canadian resource properties, timber resource properties, and options in respect of, or interest in or rights in any such properties, whether or not such property exists; or

the Common Shares are otherwise deemed under the Canadian Tax Act to be taxable Canadian property.

U.S. Holders for whom the Common Shares are, or may be, taxable Canadian property should consult their own tax advisors.

*Canada United States Income Tax Convention*

The Convention includes a complex limitation on benefits provision. U.S. Holders are urged to consult their own tax advisors to determine their entitlement to benefits under the Convention.

*United States Federal Income Taxation*

The following discussion describes the material United States federal income tax consequences to a United States Holder (as defined below), under current law, of an investment in our common shares. This discussion is based on the federal income tax laws of the United States as of the date of this annual report on Form 20-F, including the United States Internal Revenue Code of 1986, as amended, or the Code, existing and proposed Treasury Regulations promulgated thereunder, judicial authority, published administrative positions of the United States Internal Revenue Service, or IRS, and other applicable authorities, all as of the date of this annual report on Form 20-F. All of the foregoing authorities are subject to change, which change could apply retroactively and could significantly affect the tax consequences described below. We have not sought any ruling from the IRS with respect to the statements made and the conclusions reached in the following discussion and there can be no assurance that the IRS or a court will agree with our statements and conclusions. Except as explicitly described

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below, this discussion does not address any reporting obligations that may be applicable to persons holding common shares through a bank, financial institution or other entity, or a branch thereof located, organized or resident outside the United States.

This discussion applies only to a United States Holder (as defined below) that holds common shares as capital assets for United States federal income tax purposes (generally, property held for investment). The discussion neither addresses the tax consequences to any particular investor nor describes all of the tax consequences applicable to persons in special tax situations such as:

banks and certain other financial institutions;

insurance companies;

regulated investment companies;

real estate investment trusts;

brokers or dealers in stocks and securities, or currencies;

persons who use or are required to use a mark-to-market method of accounting;

certain former citizens or residents of the United States subject to Section 877 of the Code;

entities subject to the United States anti-inversion rules;

tax-exempt organizations and entities;

persons subject to the alternative minimum tax provisions of the Code;

persons whose functional currency is other than the United States dollar;

persons holding common shares as part of a straddle, hedging, conversion or integrated transaction;

persons that actually or constructively own common shares representing 10% or more of our voting power or value;

persons who acquired common shares pursuant to the exercise of an employee stock option or otherwise as compensation;

partnerships or other pass-through entities, or persons holding common shares through such entities;

persons required to accelerate the recognition of any item of gross income with respect to our common shares as a result of such income being recognized on an applicable financial statement; or



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persons that held, directly, indirectly or by attribution, common shares or other ownership interest in us prior to our initial public offering.

This discussion, moreover, does not address the United States federal estate, gift, Medicare, and alternative minimum tax considerations, or any state, local and non-United States tax considerations, relating to the ownership and disposition of our common shares. Except as specifically described below, this discussion does not address any tax consequences or reporting obligations that may be applicable to persons holding common shares through a bank, financial institution or other entity, or a branch thereof, located, organized or resident outside the United States.

If a partnership (including an entity or arrangement treated as a partnership for United States federal income tax purposes) holds the common shares, the tax treatment of a partner in the partnership generally will depend upon the status of the partner and the activities of the partnership. A

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partnership or partner in a partnership holding common shares should consult its own tax advisors regarding the tax consequences of investing in and holding the common shares.

**THE FOLLOWING DISCUSSION IS FOR INFORMATIONAL PURPOSES ONLY AND IS NOT A SUBSTITUTE FOR CAREFUL TAX PLANNING AND ADVICE. HOLDERS SHOULD CONSULT THEIR OWN TAX ADVISORS WITH RESPECT TO THE APPLICATION OF THE UNITED STATES FEDERAL INCOME TAX LAWS TO THEIR PARTICULAR SITUATIONS, AS WELL AS ANY TAX CONSEQUENCES ARISING UNDER THE FEDERAL ESTATE OR GIFT TAX LAWS OR THE LAWS OF ANY STATE, LOCAL OR NON-UNITED STATES TAXING JURISDICTION OR UNDER ANY APPLICABLE TAX TREATY.**

For purposes of the discussion below, a "United States Holder" is a beneficial owner of the common shares that is, for United States federal income tax purposes:

an individual who is a citizen or resident of the United States;

a corporation (or other entity treated as a corporation for United States federal income tax purposes) created or organized in or under the laws of the United States, any state thereof or the District of Columbia;

an estate, the income of which is subject to United States federal income taxation regardless of its source; or

a trust, if (i) a court within the United States is able to exercise primary jurisdiction over its administration and one or more United States persons have the authority to control all of its substantial decisions or (ii) in the case of a trust that was treated as a domestic trust under the law in effect before 1997, a valid election is in place under applicable Treasury Regulations to treat such trust as a domestic trust.

*Dividends and Other Distributions on the Common Shares*

Subject to the passive foreign investment company rules discussed below, the gross amount of any distribution that we make to you with respect to the common shares (including any amounts withheld to reflect Canadian or PRC withholding taxes) will be taxable as a dividend, to the extent paid out of our current or accumulated earnings and profits, as determined under United States federal income tax principles. Such income (including any withheld taxes) will be includable in your gross income on the day actually or constructively received by you. Because we do not intend to determine our earnings and profits on the basis of United States federal income tax principles, any distribution paid generally will be reported as a "dividend" for United States federal income tax purposes. Such dividends will not be eligible for the dividends-received deduction allowed to qualifying corporations under the Code.

Dividends received by a non-corporate United States Holder may qualify for the lower rates of tax applicable to "qualified dividend income," if the dividends are paid by a "qualified foreign corporation" and other conditions discussed below are met. A non-United States corporation is treated as a qualified foreign corporation (a) with respect to dividends paid by that corporation on shares that are readily tradable on an established securities market in the United States or (b) if such non-United States corporation is eligible for the benefits of a qualifying income tax treaty with the United States that includes an exchange of information program. However, we will not be treated as a qualified foreign corporation if we are a passive foreign investment company in the taxable year in which the dividend is paid or the preceding taxable year.

Under a published IRS Notice, common shares are considered to be readily tradable on an established securities market in the United States if they are listed on the Nasdaq, as our common shares are. In addition, we may be eligible for the benefits of the income tax treaty between the United States and Canada, or, if we are treated as a PRC resident enterprise under the PRC tax law

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(see " People's Republic of China Taxation") then we may be eligible for the benefits of the income tax treaty between the United States and the PRC. If we are eligible for such benefits, then dividends that we pay on our common shares would, subject to applicable limitations, be eligible for the reduced rates of taxation.

Even if dividends would be treated as paid by a qualified foreign corporation, a non-corporate United States Holder will not be eligible for reduced rates of taxation if it does not hold our common shares for more than 60 days during the 121-day period beginning 60 days before the ex-dividend date or if the United States Holder elects to treat the dividend income as "investment income" pursuant to Section 163(d)(4) of the Code. In addition, the rate reduction will not apply to dividends of a qualified foreign corporation if the non-corporate United States Holder receiving the dividend is obligated to make related payments with respect to positions in substantially similar or related property.

You should consult your own tax advisors regarding the availability of the lower tax rates applicable to qualified dividend income for any dividends that we pay with respect to the common shares, as well as the effect of any change in applicable law after the date of this annual report on Form 20-F.

Any Canadian or PRC withholding taxes imposed on dividends paid to you with respect to the common shares generally will be treated as foreign taxes eligible for credit against your United States federal income tax liability, subject to the various limitations and disallowance rules that apply to foreign tax credits generally. For purposes of calculating the foreign tax credit, dividends paid to you with respect to the common shares will be treated as income from sources outside the United States and generally will constitute passive category income. The rules relating to the determination of the foreign tax credit are complex, and you should consult your tax advisors regarding the availability of a foreign tax credit in your particular circumstances.

The amount of any dividend paid in currency other than the United States dollar will be the dividend's United States dollar value calculated by reference to the exchange rate in effect on the date of receipt, regardless of whether the payment is in fact converted into United States dollars. A United States Holder may have foreign currency gain or loss, which will be ordinary gain or loss, if any dividend is converted into United States dollars after the date of receipt.

*Disposition of the Common Shares*

You will recognize gain or loss on a sale or exchange of the common shares in an amount equal to the difference between the amount realized on the sale or exchange and your tax basis in the common shares. Subject to the discussion under " Passive Foreign Investment Company" below, such gain or loss generally will be capital gain or loss. Capital gains of a non-corporate United States Holder, including an individual that has held the common share for more than one year, currently are eligible for reduced tax rates. The deductibility of capital losses is subject to limitations.

Any gain or loss that you recognize on a disposition of the common shares generally will be treated as United States-source income or loss for foreign tax credit limitation purposes. However, if we are treated as a PRC resident enterprise for PRC tax purposes and PRC tax is imposed on gain from the disposition of the common shares (see " People's Republic of China Taxation") then a United States Holder that is eligible for the benefits of the income tax treaty between the United States and the PRC may elect to treat the gain as PRC-source income for foreign tax credit purposes. If such an election is made, the gain so treated will be treated as a separate class or "basket" of income for foreign tax credit purposes. You should consult your tax advisors regarding the proper treatment of gain or loss, as well as the availability of a foreign tax credit, in your particular circumstances.

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A United States Holder that receives currency other than the United States dollar upon the sale or other disposition of common shares will realize an amount equal to the United States dollar value of the foreign currency on the date of such sale or other disposition or, if the common shares are traded on an established securities market, in the case of cash basis and electing accrual basis taxpayers, the settlement date. If a United States Holder is not able to treat the settlement date as the realization date, the United States Holder will recognize currency gain or loss if the United States dollar value of the currency received on the settlement date differs from the amount realized. A United States Holder will have a tax basis in the currency received equal to the United States dollar amount at the spot rate on the settlement date. Generally, any gain or loss realized by a United States Holder on a subsequent conversion or disposition of such currency will be United States source ordinary income or loss.

*Passive Foreign Investment Company*

Based on the current value of our assets and the composition of our income and assets, we do not believe we were a passive foreign investment company, or PFIC, for United States federal income tax purposes for our taxable year ended December 31, 2018. However, because our PFIC status for our current taxable year ending December 31, 2019 or any future taxable year may depend, in part, on the manner in which we operate our renewable energy generation assets, we cannot assure you that we will not be a PFIC for our current taxable year ending December 31, 2019 or any future taxable year. The determination of PFIC status is based on an annual determination that cannot be made until the close of a taxable year, involves extensive factual investigation, including ascertaining the fair market value of all of our assets on a quarterly basis and the character of each item of income that we earn, and is subject to uncertainty in several respects. In particular, the application of the PFIC rules to certain of our business lines is complex and unclear, and we cannot guarantee that the United States Internal Revenue Service, or IRS, will agree with any positions that we ultimately take. Accordingly, we cannot assure you that we will not be treated as a PFIC for any taxable year or that the IRS will not take a contrary position.

A non-United States corporation such as ourselves will be treated as a PFIC, for United States federal income tax purposes for any taxable year if, applying applicable look-through rules, either:

at least 75% of its gross income for such year is passive income; or

at least 50% of the value of its assets (determined based on a quarterly average) during such year is attributable to assets that produce or are held for the production of passive income.

For this purpose, passive income generally includes dividends, interest, royalties, rents (other than certain royalties and rents derived in the active conduct of a trade or business and not derived from a related person) and net gains from transactions involving commodities. There are exceptions for income derived in the conduct of certain active businesses, including for income earned from commodities transactions. There is authority to suggest that income earned from our electricity generation business may qualify under the active business exception, but this authority is unclear. We will be treated as owning a proportionate share of the assets and earning a proportionate share of the income of any other corporation in which we own, directly or indirectly, more than 25% by value of the stock. If the percentage of our assets treated as producing passive income increases, we may be more likely to be a PFIC for the current or one or more future taxable years.

Changes in the composition of our income or composition of our assets may cause us to be more likely to be a PFIC. The determination of whether we will be a PFIC for any taxable year also may depend in part upon the value of our goodwill and other unbooked intangibles not reflected on our balance sheet (which may be determined based upon the market value of the common shares from time to time, which may be volatile). Among other matters, if our market capitalization declines, we may be a PFIC because our liquid assets and cash (which are for this purpose considered assets that produce passive income) may then represent a greater percentage of our overall assets. Further, while

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we believe our classification methodology and valuation approach (including, if relevant, any approach taken with respect to our market capitalization) is reasonable, it is possible that the IRS may challenge our classification or valuation of our goodwill and other unbooked intangibles.

If we are a PFIC for any taxable year during which you hold common shares, we will continue to be treated as a PFIC with respect to you for all succeeding years during which you hold common shares, unless we were to cease to be a PFIC and you make a "deemed sale" election with respect to the common shares. If such election is made, you will be deemed to have sold the common shares you hold at their fair market value and any gain from such deemed sale would be subject to the rules described in the following two paragraphs. After the deemed sale election, so long as we do not become a PFIC in a subsequent taxable year, your common shares with respect to which such election was made will not be treated as shares in a PFIC and, as a result, you will not be subject to the rules described below with respect to any "excess distribution" you receive from us or any gain from an actual sale or other disposition of the common shares. You are strongly urged to consult your tax advisors as to the possibility and consequences of making a deemed sale election if we are and then cease to be a PFIC and such an election becomes available to you.

If we are a PFIC for any taxable year during which you hold common shares, then, unless you make a "mark-to-market" election (as discussed below), you generally will be subject to special and adverse tax rules with respect to any "excess distribution" that you receive from us and any gain that you recognize from a sale or other disposition, including a pledge, of the common shares. For this purpose, distributions that you receive in a taxable year that are greater than 125% of the average annual distributions that you received during the shorter of the three preceding taxable years or your holding period for the common shares will be treated as an excess distribution. Under these rules:

the excess distribution or recognized gain will be allocated ratably over your holding period for the common shares;

the amount of the excess distribution or recognized gain allocated to the taxable year of distribution or gain, and to any taxable years in your holding period prior to the first taxable year in which we were treated as a PFIC, will be treated as ordinary income; and

the amount of the excess distribution or recognized gain allocated to each other taxable year will be subject to the highest tax rate in effect for individuals or corporations, as applicable, for each such year and the resulting tax will be subject to the interest charge generally applicable to underpayments of tax.

If we are a PFIC for any taxable year during which you hold common shares and any of our non-United States subsidiaries or other corporate entities in which we directly or indirectly own equity interests is also a PFIC, you would be treated as owning a proportionate amount (by value) of the shares of each such non-United States entity classified as a PFIC (each such entity, a lower-tier PFIC) for purposes of the application of these rules. You should consult your own tax advisor regarding the application of the PFIC rules to any of our lower tier PFICs.

If we are a PFIC for any taxable year during which you hold common shares, then in lieu of being subject to the tax and interest-charge rules discussed above, you may make an election to include gain on the common shares as ordinary income under a mark-to-market method, provided that the common shares constitute "marketable stock." Marketable stock is stock that is regularly traded on a qualified exchange or other market, as defined in applicable Treasury regulations. Our common shares are listed on the Nasdaq, which is a qualified exchange or other market for these purposes. Consequently, as long as the common shares are regularly traded, and you are a holder of common shares, we expect that the mark-to-market election would be available to you, if we became a PFIC but no assurances are given in this regard.

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Because a mark-to-market election cannot be made for any lower-tier PFICs that we may own, if we were a PFIC for any taxable year, a United States Holder that makes the mark-to-market election may continue to be subject to the tax and interest charges under the general PFIC rules with respect to such United States Holder's indirect interest in any investments held by us that are treated as an equity interest in a PFIC for United States federal income tax purposes.

In certain circumstances, a shareholder in a PFIC may avoid the adverse tax and interest-charge regime described above by making a "qualified electing fund" election to include in income its share of the corporation's income on a current basis. However, you may make a qualified electing fund election with respect to your common shares only if we agree to furnish you annually with a PFIC annual information statement as specified in the applicable Treasury regulations. We currently do not intend to prepare or provide the information that would enable you to make a qualified electing fund election.

A United States Holder that holds the common shares in any year in which we are classified as a PFIC will be required to file an annual report containing such information as the United States Treasury Department may require. You should consult your own tax advisor regarding the application of the PFIC rules to your ownership and disposition of the common shares and the availability, application and consequences of the active business exception and the elections discussed above.

*Information Reporting and Backup Withholding*

Information reporting to the IRS and backup withholding generally will apply to dividends in respect of our common shares, and the proceeds from the sale or exchange of our common shares, that are paid to you within the United States (and in certain cases, outside the United States), unless you furnish a correct taxpayer identification number and make any other required certification, generally on IRS Form W-9 or you otherwise establish an exemption from information reporting and backup withholding. Backup withholding is not an additional tax. Amounts withheld as backup withholding generally are allowed as a credit against your United States federal income tax liability, and you may be entitled to obtain a refund of any excess amounts withheld under the backup withholding rules if you file an appropriate claim for refund with the IRS and furnish any required information in a timely manner.

United States Holders should consult their tax advisors regarding the application of the information reporting and backup withholding rules.

*Information with Respect to Foreign Financial Assets*

United States Holders who are individuals (and certain entities closely held by individuals) generally will be required to report our name, address and such information relating to an interest in the common shares as is necessary to identify the class or issue of which your common shares are a part. These requirements are subject to exceptions, including an exception for common shares held in accounts maintained by certain financial institutions and an exception applicable if the aggregate value of all "specified foreign financial assets" (as defined in the Code) does not exceed \$50,000.

United States Holders should consult their tax advisors regarding the application of these information reporting rules.

**People's Republic of China Taxation**

Under the EIT Law, which took effect as of January 1, 2008 and amended on February 24, 2017 and December 29, 2018, enterprises established under the laws of non-PRC jurisdictions but whose "de facto management body" is located in China are considered "resident enterprises" for PRC tax purposes. Under the implementation regulations issued by the State Council relating to the EIT Law, "de facto management bodies" are defined as the bodies that have material and overall management

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and control over the business, personnel, accounts and properties of an enterprise. The Circular on Identification of China-controlled Overseas-registered Enterprises as Resident Enterprises on the Basis of Actual Management Organization, or Circular 82, further provides certain specific criteria for determining whether the "de facto management body" of a PRC-controlled offshore incorporated enterprise is located in the PRC. The criteria include whether (a) the premises where the senior management and the senior management bodies responsible for the routine production and business management of the enterprise perform their functions are mainly located within the PRC, (b) decisions relating to the enterprise's financial and human resource matters are made or subject to approval by organizations or personnel in the PRC, (c) the enterprise's primary assets, accounting books and records, company seals, and board and shareholders' meeting minutes are located or maintained in the PRC and (d) 50% or more of voting board members or senior executives of the enterprise habitually reside in the PRC. Although the Circular 82 only applies to offshore enterprises controlled by enterprises or enterprise group located within the PRC, the determining criteria set forth in the Circular 82 may reflect the tax authorities' general position on how the "de facto management body" test may be applied in determining the tax resident status of offshore enterprises. As the tax resident status of an enterprise is subject to the determination by the PRC tax authorities, uncertainties remain with respect to the interpretation of the term "de facto management body" as applicable to us. Most of our management are currently based in China, and may remain in China in the future. If we are treated as a "resident enterprise" for PRC tax purposes, we will be subject to PRC income tax on our worldwide income at a uniform tax rate of 25%, but dividends received by us from our PRC subsidiaries may be exempt from the income tax.

Under the EIT Law and its implementation regulations, dividends paid to a non-PRC investor are generally subject to a 10% PRC withholding tax, if such dividends are derived from sources within China and the non-PRC investor is considered to be a non-resident enterprise without any establishment or place within China or if the dividends paid have no connection with the non-PRC investor's establishment or place within China, unless such tax is eliminated or reduced under an applicable tax treaty. Similarly, any gain realized on the transfer of shares or convertible notes by such investor is also subject to a 10% PRC withholding tax if such gain is regarded as income derived from sources within China, unless such tax is eliminated or reduced under an applicable tax treaty.

The implementation regulations of the EIT Law provide that (a) if the enterprise that distributes dividends is domiciled in the PRC, or (b) if gains are realized from transferring equity interests of enterprises domiciled in the PRC, then such dividends or capital gains shall be treated as China-sourced income. Currently there are no detailed rules applicable to us that govern the procedures and specific criteria for determining the meaning of being "domiciled" in the PRC. As such, it is not clear how the concept of domicile will be interpreted under the EIT Law. Domicile may be interpreted as the jurisdiction where the enterprise is incorporated or where the enterprise is a tax resident.

As a result, if we are considered a PRC "resident enterprise" for tax purpose, it is possible that the dividends we pay with respect to our common shares to non-PRC enterprises, or the gain non-PRC enterprises may realize from the transfer of our common shares or our convertible notes, would be treated as income derived from sources within China and be subject to the PRC withholding tax at a rate of 10% or a lower applicable treaty rate for enterprises.

Under the IIT Law, individual income tax is payable on PRC-source dividend income. The implementation regulations of the IIT Law provide that income from dividends derived from companies, enterprises and other economic organizations in China as well as income realized from transfer of properties in China is considered derived from sources inside China, regardless of whether the place of payment was inside China. Therefore, if we are treated as a company in China for tax purposes, any dividends we pay to our non-PRC individual shareholders as well as any gains realized by our non-PRC individual shareholders or our non-PRC individual note holders from the transfer of our common shares or our convertible notes may be regarded as China-sourced income and, consequently,

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be subject to PRC withholding tax at a rate of up to 20% or a lower applicable treaty rate for individuals.

**F. Dividends and Paying Agents**

Not applicable.

**G. Statement by Experts**

Not applicable.

**H. Documents on Display**

We previously filed with the SEC our registration statements on Form F-1 (File Number 333-138144), initially filed on October 23, 2006, and registration statements on Form F-3 (File Number 333-208828), initially filed on January 4, 2016.

We are subject to the periodic reporting and other informational requirements of the Exchange Act. Under the Exchange Act, we are required to file reports and other information with the SEC. Specifically, we are required to file annually a Form 20-F within four months after the end of each fiscal year for fiscal years ending on or after December 15, 2011. Copies of reports and other information, when so filed, may be inspected without charge and may be obtained at prescribed rates at the public reference facilities maintained by the Securities and Exchange Commission at 100 F Street, N.E., Room 1580, Washington, D.C. 20549. The public may obtain information regarding the Washington, D.C. Public Reference Room by calling the Commission at 1-800-SEC-0330. The SEC also maintains a web site at [www.sec.gov](http://www.sec.gov) that contains reports, proxy and information statements, and other information regarding registrants that make electronic filings with the SEC using its EDGAR system. As a foreign private issuer, we are exempt from the rules under the Exchange Act prescribing the furnishing and content of quarterly reports and proxy statements, and officers, directors and principal shareholders are exempt from the reporting and short-swing profit recovery provisions contained in Section 16 of the Exchange Act.

Our financial statements have been prepared in accordance with U.S. GAAP.

We will furnish our shareholders with annual reports, which will include a review of operations and annual audited consolidated financial statements prepared in conformity with U.S. GAAP.

**I. Subsidiary Information**

For a listing of our major subsidiaries, see "Item 4. Information on the Company C. Organizational Structure."

**ITEM 11. *QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK***

***Foreign Exchange Risk***

The majority of our sales in 2018 are denominated in U.S. dollars, Renminbi and Japanese yen, with the remainder in other currencies such as Euros, Brazilian real and Australian dollars, while a substantial portion of our costs and expenses are denominated in Renminbi and U.S. dollars. From time to time, we enter into loan arrangements with commercial banks that are denominated primarily in Renminbi, U.S. dollars and Japanese yen. Most of our cash and cash equivalents and restricted cash are denominated in Renminbi. Therefore, fluctuations in currency exchange rates could have a significant impact on our financial stability. Fluctuations in exchange rates, particularly between the U.S. dollar, Renminbi, Canadian dollar, Brazilian real and British pounds, may result in fluctuations in foreign exchange gains or losses. We recorded a foreign exchange gain of \$25.4 million in 2016,



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recorded a foreign exchange loss \$23.4 million in 2017 and recorded a foreign exchange gain of \$6.5 million in 2018. We cannot predict the impact of future exchange rate fluctuations on our results of operations and may incur net foreign currency losses in the future. The appreciation of U.S. dollar against Renminbi for our accounts receivable was the chief reason for our foreign exchange gain in 2018. As of December 31, 2018, we held \$498.2 million in accounts receivable, most of which were denominated in U.S. dollars. Had we converted all of our accounts receivable, assuming that all of them were denominated in U.S. dollar, into Renminbi at RMB6.8755 for \$1.00, the noon buying rate as of December 31, 2018, our accounts receivable would have been RMB3,425.4 million as of December 31, 2018. Assuming that the Renminbi appreciates by a rate of 10% to an exchange rate of RMB6.1880 to \$1.00, we would record a loss of our accounts receivable in Renminbi terms. A 10% appreciation of Renminbi would result in our holding Renminbi equivalents of RMB3,082.9 million. These amounts would therefore reflect a theoretical loss of RMB342.5 million for our accounts receivable as of December 31, 2018. This calculation model is based on multiplying our accounts receivable, which are held in U.S. dollars, by a smaller Renminbi equivalent amount resulting from an appreciation of Renminbi.

Since 2008, we have hedged part of our foreign currency exposures against the U.S. dollar using foreign currency forward or option contracts in order to limit our exposure to fluctuations in foreign exchange rates. We incurred a gain on change in foreign currency derivatives of \$4.8 million in 2016, a loss on change in foreign currency derivatives of \$2.6 million in 2017 and a loss on change in foreign currency derivatives of \$18.4 million in 2018. The gains or losses on change in foreign currency derivatives are related to our hedging program.

Our financial statements are expressed in U.S. dollars, while some of our subsidiaries use different functional currencies, such as the Renminbi, Euro, Canadian dollar, British pounds and Japanese yen. The value of your investment in our common shares will be affected by the foreign exchange rate between the U.S. dollar and other currencies used by our subsidiaries. To the extent we hold assets denominated in currencies other than U.S. dollars, any appreciation of such currencies against the U.S. dollars will likely result in an exchange gain while any depreciation will likely result in an exchange loss when we convert the value of these assets into U.S. dollar equivalent amounts. On the other hand, to the extent we have liabilities denominated in currencies other than U.S. dollars, any appreciation of such currencies against the U.S. dollar will likely result in an exchange loss while any depreciation will likely result in an exchange gain when we convert the value of these liabilities into U.S. dollar equivalent amounts. These and other effects on our financial conditions resulting from the unfavorable changes in foreign currency exchange rates could have a material adverse effect on the market price of our common shares, the dividends we may pay in the future, and your investment.

***Interest Rate Risk***

Our exposure to interest rate risk primarily relates to interest expense under our short-term and long-term bank borrowings, as well as interest income generated by excess cash invested in demand deposits and liquid investments with original maturities of three months or less. Such interest-earning instruments carry a degree of interest rate risk. We used derivative financial instruments to manage some of our interest risk exposure. We have not been exposed nor do we anticipate being exposed to material risks due to changes in interest rates. However, our future interest expense may increase due to changes in market interest rates.

**ITEM 12. DESCRIPTION OF SECURITIES OTHER THAN EQUITY SECURITIES**

Not applicable.

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**PART II**

**ITEM 13. *DEFAULTS, DIVIDEND ARREARAGES AND DELINQUENCIES***

None of these events occurred in any of the years ended December 31, 2016, 2017 and 2018.

**ITEM 14. *MATERIAL MODIFICATIONS TO THE RIGHTS OF SECURITY HOLDERS AND USE OF PROCEEDS***

**A.-D. Material Modifications to the Rights of Security Holders**

See "Item 10. Additional Information B. Memorandum and Articles of Association" for a description of the rights of shareholders, which remain unchanged.

**E. Use of Proceeds**

Not applicable.

**ITEM 15. *CONTROLS AND PROCEDURES***

***Disclosure Controls and Procedures***

Our management, with the participation of our chief executive officer and chief financial officer, has performed an evaluation of the effectiveness of our disclosure controls and procedures (as defined in Rule 13a-15(e) under the Exchange Act) as of the end of the period covered by this report, as required by Rule 13a-15(b) under the Exchange Act. Based upon that evaluation, our management has concluded that, as of the end of the period covered by this annual report, our disclosure controls and procedures were effective in ensuring that the information required to be disclosed by us in the reports that we file or submit under the Exchange Act was recorded, processed, summarized and reported, within the time periods specified in the SEC's rules and forms, and that the information required to be disclosed by us in the reports that we file or submit under the Exchange Act is accumulated and communicated to our management, including our chief executive officer and chief financial officer, to allow timely decisions regarding required disclosures.

***Management's Annual Report on Internal Control over Financial Reporting***

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such item is defined in Rules 13a-15(f) under the Exchange Act, for our company. Internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of consolidated financial statements in accordance with generally accepted accounting principles and includes those policies and procedures that (a) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of a company's assets; (b) provide reasonable assurance that transactions are recorded as necessary to permit preparation of consolidated financial statements in accordance with generally accepted accounting principles, and that a company's receipts and expenditures are being made only in accordance with authorizations of a company's management and directors; and (c) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of a company's assets that could have a material effect on the consolidated financial statements.

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

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As required by Section 404 of the Sarbanes-Oxley Act of 2002 and related rules as promulgated by the Securities and Exchange Commission, our management assessed the effectiveness of our internal control over financial reporting as of December 31, 2018 using criteria established in Internal Control-Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this assessment, management concluded that our internal control over financial reporting was effective as of December 31, 2018.

Deloitte Touche Tohmatsu Certified Public Accountants LLP, an independent registered public accounting firm, who audited our consolidated financial statements for the year ended December 31, 2018, has also audited the effectiveness of internal control over financial reporting as of December 31, 2018.

***Report of the Independent Registered Public Accounting Firm***

To the shareholders and the Board of Directors of Canadian Solar Inc.

**Opinion on Internal Control over Financial Reporting**

We have audited the internal control over financial reporting of Canadian Solar Inc. and subsidiaries (the "Company") as of December 31, 2018, based on criteria established in Internal Control Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission(COSO). In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control Integrated Framework (2013) issued by COSO.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated financial statements as of and for the year ended December 31, 2018, of the Company and our report dated April 25, 2019, expressed an unqualified opinion on those financial statements.

**Basis for Opinion**

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Annual Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

**Definition and Limitations of Internal Control over Financial Reporting**

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal

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control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

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

/s/ Deloitte Touche Tohmatsu Certified Public Accountants LLP  
Shanghai, China  
April 25, 2019

***Changes in Internal Controls***

Management has evaluated, with the participation of our chief executive officer and chief financial officer, whether any changes in our internal control over financial reporting that occurred during our last fiscal year have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting. Based on the evaluation we conducted, management has concluded that no such changes occurred during the period covered by this annual report on Form 20-F.

**ITEM 16A. *AUDIT COMMITTEE FINANCIAL EXPERT***

Our board of directors has determined that Lars-Eric Johansson qualifies as an "audit committee financial expert" as defined in Item 16A of Form 20-F. Each of the members of the audit committee is an "independent director" as defined in the Nasdaq Marketplace Rules.

**ITEM 16B. *CODE OF ETHICS***

Our board of directors has adopted a code of ethics that applies to our directors, officers, employees and agents, including certain provisions that specifically apply to our chief executive officer, chief financial officer, chief operations officer, chief technology officer, vice presidents and any other persons who perform similar functions for us. We have posted our code of business conduct on our website [www.canadiansolar.com](http://www.canadiansolar.com). We hereby undertake to provide to any person without charge, a copy of our code of business conduct and ethics within ten working days after we receive such person's written request.

**ITEM 16C. *PRINCIPAL ACCOUNTANT FEES AND SERVICES***

The following table sets forth the aggregate fees by categories specified below in connection with certain professional services rendered by Deloitte Touche Tohmatsu Certified Public Accountants LLP,

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our principal external auditors, for the periods indicated. We did not pay any other fees to our auditors during the periods indicated below.

	For the Years Ended	
	December 31,	
	2017	2018
Audit fees <sup>(1)</sup>	\$ 1,791,044	\$ 1,770,000
Audit related fees <sup>(2)</sup>	\$ 869,158	\$ 603,544
Tax fees <sup>(3)</sup>	\$ 332,898	\$ 44,954
All other fees <sup>(4)</sup>	\$ 474,442	\$ 216,723

- (1) "Audit fees" means the aggregate fees billed for professional services rendered by our principal auditors for the annual audit of our consolidated financial statements.
- (2) "Audit related fees" represents the aggregate fees billed for assurance and related services by our principal auditors that are reasonably related to the performance of the audit or review of our consolidated financial statements and are not reported as audit fees. These include professional services rendered in connection with bond and equity offerings, statutory audits of our subsidiary companies, quarterly reviews and other related services. In 2017, "Audit related fees" included approximately \$0.9 million for the statutory audits of our subsidiary companies. In 2018, "Audit related fees" included approximately \$0.6 million for the statutory audits of our subsidiary companies.
- (3) "Tax fees" of 2017 and 2018 were for services rendered by our principal accountants for tax compliance, tax advice and tax planning.
- (4) "All other fees", refers to the consulting service for SAP consulting service.

The policy of our audit committee is to pre-approve all audit and non-audit services provided by Deloitte Touche Tohmatsu Certified Public Accountants LLP, including audit services, audit-related services, tax services and other services as described above, other than those for *de minimis* services which are approved by the Audit Committee prior to the completion of the audit. We have a written policy on the engagement of an external auditor.

**ITEM 16D. EXEMPTIONS FROM THE LISTING STANDARDS FOR AUDIT COMMITTEES**

Not applicable.

**ITEM 16E. PURCHASES OF EQUITY SECURITIES BY THE ISSUER AND AFFILIATED PURCHASERS**

None.

**ITEM 16F. CHANGE IN REGISTRANT'S CERTIFYING ACCOUNTANT**

Not applicable.

**ITEM 16G. CORPORATE GOVERNANCE**

None.

**ITEM 16H. MINE SAFETY DISCLOSURE**

Not applicable.



Table of Contents**PART III****ITEM 17. FINANCIAL STATEMENTS**

We have elected to provide financial statements pursuant to Item 18.

**ITEM 18. FINANCIAL STATEMENTS**

The consolidated financial statements of Canadian Solar Inc. are included at the end of this annual report.

**ITEM 19. EXHIBITS**

Exhibit Number	Description of Document
1.1	<u>Amended Articles of Continuance (incorporated by reference to Exhibit 3.2 of our registration statement on Form F-1 (File No. 333-138144), as amended, initially filed with the SEC on October 23, 2006)</u>
2.1	<u>Registrant's Specimen Certificate for Common Shares (incorporated by reference to Exhibit 4.11 from our F-1 registration statement (File No. 333-138144), as amended, initially filed with the Commission on October 23, 2006)</u>
4.1	<u>Amended and Restated Share Incentive Plan of the Registrant, effective on May 8, 2011 (incorporated by reference to Exhibit 4.1 of our annual report on Form 20-F for the year ended December 31, 2016 (File No. 001-33107), initially filed with the SEC on April 27, 2017)</u>
4.2	<u>Form of Director Indemnity Agreement (incorporated by reference to Exhibit 4.1 of our annual report on Form 20-F for the year ended December 31, 2008 (File No. 001-33107), as amended, initially filed with the SEC on June 8, 2009)</u>
4.3	<u>Employment Agreement between the Registrant and Dr. Shawn Qu (incorporated by reference to Exhibit 10.2 of our registration statement on Form F-1 (File No. 333-138144), as amended, initially filed with the SEC on October 23, 2006)</u>
4.4	<u>Form of Employment Agreement between the Registrant and its executive officers (incorporated by reference to Exhibit 4.7 of our annual report on Form 20-F for the year ended December 31, 2010 (File No. 001-33107), as amended, initially filed with the SEC on May 17, 2011)</u>
4.5	<u>Indenture, dated as of February 18, 2014, between the Registrant and The Bank of New York Mellon, as the trustee (incorporated by reference to Exhibit 4.5 of our annual report on Form 20-F for the year ended December 31, 2013 (File No. 001-33107), as amended, initially filed with the SEC on April 28, 2014)</u>
4.6	<u>Purchase and Sale Agreement by and among Sharp Corporation, Sharp US Holding Inc., Canadian Solar Energy Acquisition Co. and Canadian Solar Inc., dated as of February 3, 2015 (incorporated by reference to Exhibit 4.6 of our annual report on Form 20-F for the year ended December 31, 2014 (File No. 001-33107), as amended, initially filed with the SEC on April 23, 2015)</u>
8.1*	<u>List of Major Subsidiaries</u>
12.1*	<u>CEO Certification Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002</u>
12.2*	<u>CFO Certification Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002</u>
13.1**	<u>CEO Certification Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002</u>

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<b>Exhibit Number</b>	<b>Description of Document</b>
13.2**	<u>CFO Certification Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002</u>
15.1*	<u>Consent of Deloitte Touche Tohmatsu Certified Public Accountants LLP</u>
101*	Financial information from registrant for the year ended December 31, 2018 formatted in eXtensible Business Reporting Language (XBRL):  (i) Consolidated Balance Sheets as of December 31, 2017 and 2018; (ii) Consolidated Statements of Operations for the Years Ended December 31, 2016, 2017 and 2018; (iii) Consolidated Statements of Comprehensive Income for the Years Ended December 31, 2016, 2017 and 2018; (iv) Consolidated Statements of Changes in Equity for the Years Ended December 31, 2016, 2017 and 2018; (v) Consolidated Statements of Cash Flows for the Years Ended December 31, 2016, 2017 and 2018; (vi) Notes to Consolidated Financial Statements; and (vii) Additional Information Financial Statements Schedule I

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\*  
Filed herewith.

\*\*  
Furnished herewith.



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**SIGNATURES**

The registrant hereby certifies that it meets all of the requirements for filing on Form 20-F and that it has duly caused and authorized the undersigned to sign this annual report on its behalf.

CANADIAN SOLAR INC.

By: /s/ Shawn (Xiaohua) Qu

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Name: Shawn (Xiaohua) Qu  
Title: Chairman, President and  
Chief Executive Officer

By: /s/ Huifeng Chang

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Name: Huifeng Chang  
Title: Senior Vice President and  
Chief Financial Officer

Date: April 25, 2019

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**REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM**

To the Board of Directors and Shareholders of Canadian Solar Inc.

**Opinion on the Financial Statements**

We have audited the accompanying consolidated balance sheets of Canadian Solar Inc. and subsidiaries (the "Company") as of December 31, 2018 and 2017, the related consolidated statements of operations, comprehensive income, changes in shareholders' equity, and cash flows, for each of the three years in the period ended December 31, 2018, the related notes and the financial statement schedule included as Schedule I (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2018 and 2017, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2018, in conformity with accounting principles generally accepted in the United States of America.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2018, based on criteria established in *Internal Control Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission and our report dated April 25, 2019, expressed an unqualified opinion on the Company's internal control over financial reporting.

**Basis for Opinion**

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ Deloitte Touche Tohmatsu Certified Public Accountants LLP

Shanghai China

April 25, 2019

We have served as the Company's auditor since 2006.

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## CANADIAN SOLAR INC.

## CONSOLIDATED BALANCE SHEETS

	December 31, 2017	December 31, 2018
	(In Thousands of U.S. Dollars, except share data)	
<b>ASSETS</b>		
(Including balances in variable interest entities, see Note 10)		
Current assets:		
Cash and cash equivalents	561,679	444,298
Restricted cash - current	617,761	480,976
Accounts receivable trade, net of allowance of \$32,941 and \$32,733 as of December 31, 2017 and 2018, respectively	358,091	498,231
Accounts receivable, unbilled	1,253	38
Amounts due from related parties	26,102	16,740
Inventories	346,092	262,022
Value added tax recoverable	94,503	107,222
Advances to suppliers - current, net of allowance of \$5,705 and \$5,702 as of December 31, 2017 and 2018, respectively	61,399	37,011
Derivative assets - current	16,200	4,761
Project assets - current	1,523,342	933,563
Assets held-for-sale	182,797	
Prepaid expenses and other current assets	296,084	289,459
<b>Total current assets</b>	<b>4,085,303</b>	<b>3,074,321</b>
Restricted cash - non-current	10,695	15,716
Property, plant and equipment, net	747,235	884,986
Solar power systems, net	63,964	54,898
Deferred tax assets	131,796	121,087
Advances to suppliers - non-current, net of allowance of \$13,057 and \$15,224 as of December 31, 2017 and 2018, respectively	38,325	48,908
Prepaid land use rights	78,649	65,718
Investments in affiliates	414,215	126,095
Intangible assets, net	10,986	14,903
Goodwill	6,248	1,005
Derivative assets - non-current	10,911	3,216
Project assets - non-current	148,170	352,200
Other non-current assets	143,130	129,605
<b>TOTAL ASSETS</b>	<b>5,889,627</b>	<b>4,892,658</b>
<b>LIABILITIES, REDEEMABLE NON-CONTROLLING INTERESTS AND EQUITY</b>		
(Including balances in variable interest entities, see Note 10)		
Current liabilities:		
Short-term borrowings	1,608,962	1,027,927
Long-term borrowings on project assets - current	348,793	265,770
Accounts payable	402,964	379,462
Short-term notes payable	572,631	369,722
Amounts due to related parties	6,023	16,847
Other payables	315,321	408,013
Convertible notes		127,428
Advances from customers	51,739	39,024
Derivative liabilities - current	6,121	13,698
Liabilities held-for-sale	185,872	
Tax equity liabilities	407,683	158,496
Other current liabilities	201,903	141,970

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Total current liabilities	4,108,012	2,948,357
Accrued warranty costs	55,659	50,605
Convertible notes	126,476	
Long-term borrowings	404,341	393,614
Amounts due to related parties		568
Derivative liabilities non-current	359	
Liability for uncertain tax positions	9,264	20,128
Deferred tax liabilities	5,562	35,698
Loss contingency accruals	25,682	24,608
Financing liabilities non-current	12,243	77,835
Other non-current liabilities	82,254	68,400
<b>TOTAL LIABILITIES</b>	<b>4,829,852</b>	<b>3,619,813</b>
Commitments and contingencies (Note 20)		
Equity:		
Common shares no par value: unlimited authorized shares, 58,496,685 and 59,180,624 shares issued and outstanding at December 31, 2017 and 2018, respectively	702,162	702,931
Additional paid-in capital	417	10,675
Retained earnings	383,681	622,016
Accumulated other comprehensive loss	(54,034)	(110,149)
<b>Total Canadian Solar Inc. shareholders' equity</b>	<b>1,032,226</b>	<b>1,225,473</b>
Non-controlling interests in subsidiaries	27,549	47,372
<b>TOTAL EQUITY</b>	<b>1,059,775</b>	<b>1,272,845</b>
<b>TOTAL LIABILITIES AND EQUITY</b>	<b>5,889,627</b>	<b>4,892,658</b>

See notes to consolidated financial statements.

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## CANADIAN SOLAR INC.

## CONSOLIDATED STATEMENTS OF OPERATIONS

	Years Ended December 31,		
	2016	2017	2018
	(In Thousands of U.S. Dollars, except share and per share data)		
Net revenues:			
Non-related parties	2,605,335	3,221,928	3,624,687
Related parties	247,743	168,465	119,825
Total net revenues	2,853,078	3,390,393	3,744,512
Cost of revenues:			
Non-related parties	2,216,146	2,641,583	2,894,611
Related parties	219,744	111,212	74,819
Total cost of revenues	2,435,890	2,752,795	2,969,430
Gross profit	417,188	637,598	775,082
Operating expenses:			
Selling expenses	145,367	156,032	165,402
General and administrative expenses	203,789	230,998	245,376
Research and development expenses	17,407	28,777	44,193
Other operating income, net	(42,539)	(47,554)	(44,546)
Total operating expenses, net	324,024	368,253	410,425
Income from operations	93,164	269,345	364,657
Other income (expenses):			
Interest expense	(69,723)	(117,971)	(106,032)
Interest income	10,236	10,477	11,207
Gain (loss) on change in fair value of derivatives	27,322	(272)	(19,230)
Foreign exchange gain (loss)	25,406	(23,449)	6,529
Investment income (loss)	(1,532)	(3,607)	41,361
Gain on repurchase of convertible notes	2,782		
Other expenses, net	(5,509)	(134,822)	(66,165)
Income before income taxes and equity in earnings (loss) of unconsolidated investees	87,655	134,523	298,492
Income tax expense	(17,976)	(40,951)	(61,969)
Equity in earnings (loss) of unconsolidated investees	(4,404)	9,411	5,908
Net income	65,275	102,983	242,431
Less: net income attributable to non-controlling interests	26	3,411	5,361
Net income attributable to Canadian Solar Inc.	65,249	99,572	237,070

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Earnings per share basic	\$	1.13	\$	1.71	\$	4.02
Shares used in computation basic		57,524,349		58,167,004		58,914,540
Earnings per share diluted	\$	1.12	\$	1.69	\$	3.88
Shares used in computation diluted		58,059,063		61,548,158		62,291,670

See notes to consolidated financial statements.

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Table of Contents**CANADIAN SOLAR INC.****CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME**

	<b>Years Ended December 31,</b>		
	<b>2016</b>	<b>2017</b>	<b>2018</b>
	<b>(In Thousands of U.S. Dollars)</b>		
Net income	65,275	102,983	242,431
Other comprehensive income (loss) (net of tax of nil):			
Foreign currency translation adjustment	(41,786)	39,305	(50,577)
Gain (loss) on commodity hedge	2,083	(1,844)	953
Gain (loss) on interest rate swap	10,375	(246)	5,141
De-recognition of commodity hedge and interest rate swap			(8,752)
<b>Comprehensive income</b>	<b>35,947</b>	<b>140,198</b>	<b>189,196</b>
Less: comprehensive income attributable to non-controlling interests	2,656	2,846	8,241
<b>Comprehensive income attributable to Canadian Solar Inc.</b>	<b>33,291</b>	<b>137,352</b>	<b>180,955</b>

See notes to consolidated financial statements.



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## CANADIAN SOLAR INC.

## CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY

	Common Shares		Additional Paid-in Capital	Retained Earnings	Accumulated Other Comprehensive Income (loss)	Earnings Attributable to Canadian Solar Inc.	Non- Controlling Interest	Total Equity
	Number	\$	\$	\$	\$	\$	\$	\$
(In Thousands of U.S. Dollars, except share data)								
Balance at January 1, 2016	55,965,443	677,103	(17,139)	218,860	(59,856)	818,968	13,542	832,510
Net income				65,249		65,249	26	65,275
Foreign currency translation adjustment					(44,416)	(44,416)	2,630	(41,786)
Capital injection from non-controlling interests							1,648	1,648
Issuance of ordinary shares, net of issuance costs	1,029,661	23,408				23,408		23,408
Deferred tax on issuance costs of ordinary shares		65				65		65
Share-based compensation			7,757			7,757		7,757
Tax benefit of share-based compensation			485			485		485
Exercise of share options	835,045	707				707		707
Fair value change on derivatives					12,458	12,458		12,458
Disposal of a subsidiary							(3,137)	(3,137)
Balance at December 31, 2016	57,830,149	701,283	(8,897)	284,109	(91,814)	884,681	14,709	899,390
Net income				99,572		99,572	3,411	102,983
Foreign currency translation adjustment					39,870	39,870	(565)	39,305
Acquisition of subsidiaries							9,994	9,994
Share-based compensation			9,314			9,314		9,314
Exercise of share options	666,536	879				879		879
Fair value change on derivatives					(2,090)	(2,090)		(2,090)
Balance at December 31, 2017	58,496,685	702,162	417	383,681	(54,034)	1,032,226	27,549	1,059,775
Net income				237,070		237,070	5,361	242,431
Foreign currency translation adjustment					(53,457)	(53,457)	2,880	(50,577)
Cumulative-effect adjustment for the adoption of ASU 2014-09				1,265		1,265		1,265
Acquisition of subsidiaries							7,703	7,703
Acquisition non-controlling interest's ownership							(6,591)	(6,591)
Transfer of equity interest in subsidiaries to non-controlling shareholders							10,470	10,470
Share-based compensation			10,258			10,258		10,258
Exercise of share options	683,939	769				769		769
De-recognition of derivatives					(8,752)	(8,752)		(8,752)
Fair value change on derivatives					6,094	6,094		6,094
Balance at December 31, 2018	59,180,624	702,931	10,675	622,016	(110,149)	1,225,473	47,372	1,272,845

See notes to consolidated financial statements.

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## CANADIAN SOLAR INC.

## CONSOLIDATED STATEMENTS OF CASH FLOWS

	Years Ended December 31,		
	2016	2017	2018
	(In Thousands of U.S. Dollars)		
Operating activities:			
Net income	65,275	102,983	242,431
Adjustments to reconcile net income to net cash provided by (used in) operating activities:			
Depreciation and amortization	95,849	99,273	129,256
Loss on disposal of property, plant and equipment	8,094	13,976	2,565
Gain on disposal of solar power systems	(46,367)	(27,803)	(36,098)
Gain on disposal of investment in affiliates			(47,102)
Impairment loss of property, plant and equipment	22,757	11,626	30,968
Impairment loss of project assets	2,952		9,016
Impairment loss of investment		3,686	5,738
(Gain) loss on change in fair value of derivatives	(27,322)	272	19,230
Equity in loss (earnings) of unconsolidated investees	4,404	(9,411)	(5,908)
Allowance for doubtful accounts	(280)	7,265	2,812
Write-down of inventories	19,467	17,820	14,646
Gain on repurchase of convertible notes	(2,782)		
Share-based compensation	7,757	9,314	10,258
Unrealized gain (loss) from sales to unconsolidated investees	9,469	13,065	(13,573)
Changes in operating assets and liabilities:			
Accounts receivable trade	(33,060)	46,337	(179,607)
Accounts receivable, unbilled	4,688	2,345	1,158
Amounts due from related parties	(4,230)	(10,089)	9,237
Inventories	(50,557)	(49,024)	55,408
Value added tax recoverable	(11,466)	(38,190)	(9,206)
Advances to suppliers	(30,609)	(15,990)	29,001
Project assets	(6,792)	(128,982)	(30,501)
Prepaid expenses and other current assets	(135,426)	(49,813)	(2,208)
Other non-current assets	(1,308)	(23,795)	9,387
Accounts payable	61,157	(27,758)	47,756
Short-term notes payable	(141,363)	243,685	(173,148)
Amounts due to related parties	(43,774)	33,908	10,467
Other payables	63,828	(5,889)	39,791
Advances from customers	19,710	(44,985)	(11,225)
Other liabilities	(995)	(18,774)	(29,691)
Accrued warranty costs	(3,847)	(6,726)	(3,563)
Prepaid land use rights	(19,714)	(30,087)	6,557
Goodwill		1,369	5,243
Liability for uncertain tax positions	(6,037)	833	10,863
Deferred taxes	(95,629)	84,939	37,591
Net settlement of derivatives	(1,922)	(1,460)	28,731
Net cash provided by (used in) operating activities	(278,073)	203,920	216,280

See notes to consolidated financial statements.

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## CANADIAN SOLAR INC.

## CONSOLIDATED STATEMENTS OF CASH FLOWS (Continued)

	Years Ended December 31,		
	2016	2017	2018
	(In Thousands of U.S. Dollars)		
<b>Investing activities:</b>			
Investments in affiliates	(124,737)	(92,925)	(11,036)
Return of investment from unconsolidated investees	7,442	4,233	816
Purchase of property, plant and equipment	(286,722)	(276,978)	(316,282)
Purchase of solar power systems	(824,766)	(33,697)	
Proceeds from disposal of solar power systems	90,078	128,768	17,800
Proceeds from insurance claim	46,801	43,930	
Proceeds from disposal of investment on subsidiaries	1,899		
Proceeds from disposal of investment in affiliates			337,773
Distribution to non-controlling shareholders upon disposal of a subsidiary	(3,137)		
Acquisition of subsidiaries, net of cash paid		(12,561)	
Net cash provided by(used in) investing activities	(1,093,142)	(239,230)	29,071
<b>Financing activities:</b>			
Proceeds from short-term borrowings	1,841,808	1,646,910	1,430,708
Repayment of short-term borrowings	(2,243,003)	(2,068,069)	(2,368,967)
Proceeds from long-term borrowings	1,076,332	690,841	382,831
Gross proceeds from issuance of common shares	23,864		
Issuance costs paid for common shares offering	(456)		
Payment of financing costs	(3,750)		
Acquisition of non-controlling interest			(6,591)
Proceeds from non-controlling interest	1,648		10,470
Proceeds from third party financing liabilities	415,523	12,243	119,095
Proceeds from sales leaseback arrangement	96,697	61,142	35,944
Distributions to tax equity investors		(9,582)	(3,013)
Repayment of capital lease obligation	(24,191)	(30,128)	(64,859)
Proceeds from short-term commercial paper	134,311		
Repayment of short-term commercial paper		(138,953)	
Payments for repurchase of convertible notes	(19,667)		
Proceeds from exercise of stock options	707	879	769
Net cash provided by(used in) financing activities	1,299,823	165,283	(463,613)
Effect of exchange rate changes	(46,629)	51,342	(38,725)
Net increase (decrease) in cash, cash equivalents and restricted cash	(118,021)	181,315	(256,987)
Cash, cash equivalents and restricted cash at the beginning of the year	1,134,683	1,007,700	1,190,134
Less: net increase (decrease) in cash, cash equivalents and restricted cash classified within assets held-for-sale	8,962	(1,119)	(7,843)
Cash, cash equivalents and restricted cash at the end of the year	1,007,700	1,190,134	940,990
<b>Supplemental disclosure of cash flow information:</b>			
Interest paid (net of amounts capitalized)	70,827	113,513	103,236
Income taxes paid	187,876	45,483	32,135
<b>Supplemental schedule of non-cash activities:</b>			
Reclassification of solar power systems to project assets	1,362,037	4,782	
Unpaid proceeds from disposal of subsidiaries included in prepaid expenses and other current assets	14,604		
Property, plant and equipment costs included in other payables	120,881	153,017	228,970
Solar power systems costs included in accounts payables	72,885		
Decrease in amounts due from related parties, net of investments in affiliates	65,090		

See notes to consolidated financial statements.

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## CANADIAN SOLAR INC.

## CONSOLIDATED STATEMENTS OF CASH FLOWS (Continued)

The following table provides a reconciliation of cash, cash equivalents, and restricted cash reported within the balance sheets that sum to the total of the same such amounts shown in the statements of cash flows.

	Years Ended December 31,		
	2016	2017	2018
	(In Thousands of U.S. Dollars)		
Cash and cash equivalents	511,039	561,679	444,298
Restricted cash - current	487,516	617,761	480,976
Restricted cash - non-current	9,145	10,695	15,716
Total cash and cash equivalents, and restricted cash shown in the statements of cash flows	1,007,700	1,190,134	940,990
Cash, cash equivalents and restricted cash classified within assets held-for-sale:			
Cash and cash equivalents	8,921	7,714	
Restricted cash - current	41	129	
Total	8,962	7,843	

See notes to consolidated financial statements.

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**CANADIAN SOLAR INC.**

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS**

**FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018**

**(In Thousands of U.S. Dollars, unless otherwise indicated)**

**1. ORGANIZATION AND PRINCIPAL ACTIVITIES**

Canadian Solar Inc. ("CSI") was incorporated pursuant to the laws of the Province of Ontario in October 2001, and changed its jurisdiction by continuing under the Canadian federal corporate statute, the Canada Business Corporations Act, or CBCA, effective June 1, 2006.

CSI and its subsidiaries (collectively, the "Company") design, develop, and manufacture solar wafers, cells and solar power products. In recent years, the Company has increased investment in, and management attention on its total solutions business, which primarily consists of solar power project development and sale, EPC and development services, O&M services, operating solar power projects and sales of electricity, and sales of solar system kits. As of December 31, 2018, major subsidiaries of CSI are included in Appendix 1.

**2. SUMMARY OF PRINCIPAL ACCOUNTING POLICIES**

**(a) Basis of presentation**

The consolidated financial statements of the Company have been prepared in accordance with U.S. generally accepted accounting principles ("U.S. GAAP").

**(b) Basis of consolidation**

The consolidated financial statements include the financial statements of the Company and its subsidiaries in which it has a controlling financial interest or variable interest entities ("VIEs") for which the Company is a primary beneficiary.

A controlling financial interest is typically determined when a company holds a majority of the voting equity interest in an entity. All intercompany balances and transactions between the Company and its subsidiaries have been eliminated in consolidation.

The Company consolidates VIEs when the Company is the primary beneficiary. The primary beneficiary of a VIE is the party that has the power to direct the activities that most significantly impact the performance of the entity and the obligation to absorb losses or the right to receive benefits that could potentially be significant to the entity. VIEs are entities that lack sufficient equity to finance their activities without additional financial support from other parties or whose equity holders, as a group, lack one or more of the following characteristics: (a) direct or indirect ability to make decisions; (b) obligation to absorb expected losses; or (c) right to receive expected residual returns. VIEs must be evaluated quantitatively and qualitatively to determine the primary beneficiary, which is the reporting entity that has (a) the power to direct activities of a VIE that most significantly impact the VIEs economic performance and (b) the obligation to absorb losses of the VIE that could potentially be significant to the VIE or the right to receive benefits from the VIE that could potentially be significant to the VIE. The primary beneficiary is required to consolidate the VIE for financial reporting purposes. A VIE can have only one primary beneficiary, but may not have a primary beneficiary if no party meets the criteria described above.

When evaluating whether the Company is the primary beneficiary of a VIE, and must therefore consolidate the entity, the Company performs a qualitative analysis that considers the design of the VIE, the nature of its involvement and the variable interests held by other parties. If that evaluation is

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CANADIAN SOLAR INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

**2. SUMMARY OF PRINCIPAL ACCOUNTING POLICIES (Continued)**

inconclusive as to which party absorbs a majority of the entity's expected losses or residual returns, a quantitative analysis is performed to determine the primary beneficiary.

For the Company's consolidated VIEs, the Company has presented on the consolidated balance sheets, to the extent material, the assets of its consolidated VIEs that can only be used to settle specific obligations of the consolidated VIE, and the liabilities of its consolidated VIEs for which creditors do not have recourse to its general assets outside of the consolidated VIE. All significant intercompany accounts and transactions between the Company and its consolidated VIEs have been eliminated in consolidation.

*(c) Use of estimates*

The preparation of consolidated financial statements in conformity with U.S. GAAP requires the Company to make estimates and assumptions that affect reported amounts of assets and liabilities, disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates. Significant accounting estimates reflected in the Company's consolidated financial statements include revenue recognition for sales of solar power projects, EPC and development services accounted for under cost-based input method, allowance for doubtful accounts receivable and advances to suppliers, valuation of inventories and provision for firm purchase commitments, provision for contingent liability, impairment of long-lived assets and project assets, the estimated useful lives of long-lived assets, determination of assets retirement obligation ("ARO"), accrual for warranty and the recognition of the benefit from the purchased warranty insurance, fair value estimate of financial instruments including warrants and other types of derivative, accrual for uncertain tax positions, valuation allowances for deferred tax assets, applying acquisition method of accounting to business acquisitions and the grant-date fair value of share-based compensation awards and related forfeiture rates.

*(d) Cash and cash equivalents and restricted cash*

Cash and cash equivalents are stated at cost, which approximates fair value. Cash and cash equivalents consist of cash on hand and demand deposits, which are unrestricted as to withdrawal and use, and have original maturities of three months or less when acquired.

Restricted cash represents amounts held by banks, which are not available for the Company's general use, as security for issuance of letters of credit, short-term notes payable and bank borrowings. Upon maturity of the letters of credit, repayment of short-term notes payable or bank borrowings, the deposits are released by the bank and become available for general use by the Company.

*(e) Accounts receivable, unbilled*

Accounts receivable, unbilled represents a contract asset for revenue that has been recognized in advance of billing the customer. The Company uses the cost-based input method to recognize revenue from EPC and development services when all relevant revenue recognition criteria have been met. Under this accounting method, revenue may be recognized in advance of billing the customer, which

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**CANADIAN SOLAR INC.**

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

**FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018**

**(In Thousands of U.S. Dollars, unless otherwise indicated)**

**2. SUMMARY OF PRINCIPAL ACCOUNTING POLICIES (Continued)**

results in the recording of accounts receivable, unbilled. Once the Company meets the billing criteria under such contract, the rights to consideration becomes unconditional, it bills the customer and reclassifies the unbilled balance to accounts receivable trade. Billing requirements vary by contract, but are generally structured around completion of certain construction milestones.

*(f) Allowance for doubtful receivables*

The Company began purchasing insurance from China Export & Credit Insurance Corporation ("Sinosure") since 2009 for certain of its accounts receivable trade in order to reduce its exposure to bad debt loss. The Company provides an allowance for accounts receivable trade using primarily a specific identification methodology. An allowance is recorded based on the likelihood of collection from the specific customer regardless whether such account is covered by Sinosure. At the time the claim is made to Sinosure, the Company records a receivable from Sinosure equal to the expected recovery up to the amount of the specific allowance. The Company had recorded a receivable from Sinosure in prepaid expenses and other current assets of \$9 and \$164 as of December 31, 2017 and 2018, respectively and a corresponding reduction in bad debt expense.

*(g) Advances to suppliers*

The Company makes prepayments to certain suppliers and such amounts are recorded in advances to suppliers in the consolidated balance sheets. Advances to suppliers expected to be utilized within twelve months as of each balance sheet date are recorded as current assets and the portion expected to be utilized after twelve months are classified as non-current assets in the consolidated balance sheets.

*(h) Inventories*

Inventories are stated at the lower of cost or net realizable value. Cost is determined by the weighted-average method. Cost of inventories consists of direct materials and, where applicable, direct labor costs, tolling costs and those overhead costs that have been incurred in bringing the inventories to their present location and condition.

Adjustments are recorded to write down the cost of obsolete and excess inventories to the estimated net realizable value based on historical and forecast demand.

The Company outsources portions of its manufacturing process. These outsourcing arrangements may or may not include transfer of title of the raw materials inventory to third-party manufacturers. Such raw materials are recorded as raw materials inventory when purchased from suppliers. For those outsourcing arrangements in which the title is not transferred, the Company maintains such inventory on the Company's consolidated balance sheets as raw materials inventory while it is in physical possession of the third-party manufacturer. Upon receipt, processed inventory is reclassified to work-in-process inventory and a processing fee is paid to the third-party manufacturer.

For those outsourcing arrangements, characterized as sales, in which title (including risk of loss) is transferred to the third-party manufacturer, the Company is constructively obligated, through raw materials sales agreements and processed inventory purchase agreements, which have been entered into



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CANADIAN SOLAR INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

**2. SUMMARY OF PRINCIPAL ACCOUNTING POLICIES (Continued)**

with the third-party manufacturer simultaneously, to repurchase the inventory once processed. In this case, the raw materials remain classified as raw material inventory while in physical possession of the third-party manufacturer and cash is received, which is classified as "advances from customers" on the consolidated balance sheets and not as revenue or deferred revenue. Cash payments for outsourcing arrangements, which require prepayments for repurchase of the processed inventory, are classified as "advances to suppliers" on the consolidated balance sheets. There is no right of offset for these arrangements and accordingly, "advances from customers" and "advances to suppliers" remain on the consolidated balance sheets until the processed inventory is repurchased.

On occasion, the Company enters into firm purchase commitments to acquire materials from its suppliers. A firm purchase commitment represents an agreement that specifies all significant terms, including the price and timing of the transactions, and includes a disincentive for non-performance that is sufficiently large to make performance probable. This disincentive is generally in the form of a take-or-pay provision, which requires the Company to pay for committed volumes regardless of whether the Company actually acquires the materials. The Company evaluates these agreements and records a loss, if any, on firm purchase commitments using the same way as that used to value inventory losses.

*(i) Project assets*

Project assets consist primarily of capitalized costs relating to solar power projects in various stages of development prior to the intended sale of the solar power projects to a third party. These costs include certain acquisition costs, land costs and costs for developing and constructing a solar power system. Development costs can include legal, consulting, permitting, and other similar costs. Construction costs can include execution of field construction, installation of solar equipment, solar modules and related equipment. Interest costs incurred on debt during the construction phase and all deferred financing costs amortized during the construction phase are also capitalized within project assets.

Solar power projects are preliminarily classified as project assets unless the Company has intention not to sell them to third parties. In that case, they will be classified as solar power systems on the balance sheet. During the development phase, solar power projects are accounted for in accordance with the recognition, initial measurement and subsequent measurement subtopics of ASC 970-360, as they are considered in substance real estates. The costs to construct solar power projects are presented as operating activities or investing activities in the consolidated statement of cash flows, if they are related to project assets or solar power systems, respectively. While the solar power projects are in the development phase, they are generally classified as non-current assets, unless it is anticipated that the sale will occur within one year. Appropriateness of the classification of the solar power projects is assessed based on the circumstances on each balance sheet date. Solar power projects that the Company intends to sell within one year, which meet the criteria of ASC 360, are classified as project assets-current. Solar power projects that the Company intends to hold and operate to generate electricity are still classified as solar power systems.

The Company reviews project assets for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. The Company considers a project

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CANADIAN SOLAR INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

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(In Thousands of U.S. Dollars, unless otherwise indicated)

**2. SUMMARY OF PRINCIPAL ACCOUNTING POLICIES (Continued)**

commercially viable or recoverable if it is anticipated to be sold for a profit once it is either fully developed or fully constructed. The Company considers a partially developed or partially constructed project commercially viable or recoverable if the anticipated selling price is higher than the carrying value of the related project assets. The Company examines a number of factors to determine if the project will be recoverable, the most notable of which include whether there are any changes in environmental, ecological, permitting, market pricing or regulatory conditions that impact the project. Such changes could cause the costs of the project to increase or the selling price of the project to decrease. If a project is not considered recoverable, the Company impairs the respective project assets and adjusts the carrying value to the estimated recoverable amount, with the resulting impairment recorded within operations.

Project assets are often held in separate legal entities which are formed for the special purpose of constructing the project assets, which the Company refers to as "project companies". The Company consolidates project companies as described in note (b) above. The cash paid to the non-controlling interest in connection with disposal of such project companies was recorded as a financing activity in the consolidated statement of cash flows.

The Company does not depreciate the project assets. Any revenue generated from a solar power system connected to the grid would be considered incidental revenue and accounted for as a reduction of the capitalized project costs for development. If circumstances change, and the Company will begin to operate the project assets for the purpose of generating income from the sale of electricity, the project assets will be reclassified to solar power systems.

**(j) Business combination**

Business combinations are recorded using the acquisition method of accounting and, accordingly, the acquired assets and liabilities are recorded at their fair market value at the date of acquisition. Any excess of acquisition cost over the fair value of the acquired assets and liabilities, including identifiable intangible assets, is recorded as goodwill. The Company charges acquisition related costs that are not part of the purchase price consideration to general and administrative expenses as they are incurred. These costs typically include transaction and integration costs, such as legal, accounting, and other professional fees.

**(k) Assets acquisition**

When the Company acquires other entities, if the assets acquired and liabilities assumed do not constitute a business, the transaction is accounted for as an asset acquisition. Assets are recognized based on the cost, which generally includes the transaction costs of the asset acquisition, and no gain or loss is recognized unless the fair value of noncash assets given as consideration differs from the assets' carrying amounts on the Company's books. The costs of asset acquisitions generally include the direct transaction costs of the asset acquisition. If the consideration given is not in the form of cash (that is, in the form of noncash assets, liabilities incurred, or equity interests issued), measurement is based on either the cost to the acquiring entity or the fair value of the assets (or net assets) acquired, whichever is more clearly evident and, thus, more reliably measurable. The cost of a group of assets acquired in

CANADIAN SOLAR INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

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**2. SUMMARY OF PRINCIPAL ACCOUNTING POLICIES (Continued)**

an asset acquisition is allocated to the individual assets acquired or liabilities assumed based on their relative fair value and does not give rise to goodwill.

**(l) 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. The Company does not amortize goodwill but instead test goodwill for impairment at least annually in the fourth quarter. The Company performs impairment tests between scheduled annual tests 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.

The Company 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 conditions, cost factors, a sustained share price or market capitalization decrease, and any reporting unit specific events. If it is determined 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 not greater than its carrying value, the Company proceeds to perform the two-step impairment test. The Company 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. In accordance with the authoritative guidance over fair value measurements, the Company defines 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. The Company primarily uses the income approach methodology of valuation, which includes the discounted cash flow method, to estimate the fair values of the reporting units.

Significant management judgment is required when estimating the fair value of the reporting units including the forecasting of future operating results and the selection of discount and expected future growth rates that the Company uses in discounting 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 estimated fair value of the reporting unit exceeds its carrying value, goodwill is not impaired, and no further analysis is required. Conversely, if the carrying value of a reporting unit exceeds its estimated fair value, the Company records an impairment loss equal to the excess, not to exceed the total amount of goodwill allocated to the reporting unit.

The Company performed a qualitative assessment for each of the reporting units in the fourth quarter of 2018 and concluded that it was not more likely than not that the fair value of each reporting unit was less than its carrying amount. Accordingly, the two-step goodwill impairment test for the Company's reporting units was not considered necessary.

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## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

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## 2. SUMMARY OF PRINCIPAL ACCOUNTING POLICIES (Continued)

*(m) Property, plant and equipment*

Property, plant and equipment is recorded at cost less accumulated depreciation. The cost of property, plant and equipment comprises its purchase price and any directly attributable costs, including interest costs capitalized during the period the asset is brought to its working condition and location for its intended use. The Company expenses repair and maintenance costs as incurred.

Depreciation is computed on a straight-line basis over the following estimated useful lives:

Buildings	20 years
Leasehold improvements	Over the shorter of the lease term or their estimated useful lives
Machinery	5-10 years
Furniture, fixtures and equipment	5 years
Motor vehicles	5 years

Costs incurred in constructing new facilities, including progress payments, capitalized interests and other costs relating to the construction, are capitalized and transferred to property, plant and equipment on completion and depreciation commences from that time.

For property, plant and equipment that has been placed into service, but is subsequently idled temporarily, the Company continues to record depreciation expense during the idle period. The Company adjusts the estimated useful life of the idled assets if the estimated useful life has changed.

*(n) Assets held-for-sale*

Long-lived assets (disposal group) are classified as held for sale if their carrying amount will be recovered principally through a sale transaction rather than through continuing use. This condition is regarded as met only when management commits to a plan to sell the asset; the asset is available for immediate sale in its present condition; an active program to locate a buyer and other actions required to complete the plan have been initiated; the sale of the asset is probable within one year; the asset is being actively marketed for sale at a reasonable price in relation to its current fair value; and it is unlikely that significant changes to the plan will be made or that the plan will be withdrawn. Long-lived assets classified as held for sale are measured at lower of their carrying amount and fair value less costs to sell and depreciation (amortization) ceases once the asset is classified as held for sale.

*(o) Solar power systems*

Solar power systems are comprised of ground-mounted projects and roof top systems that the Company intends to hold for use. The solar power systems are stated at cost less accumulated depreciation. The cost consists primarily of direct costs incurred in various stages of development prior to the commencement of operations. For a self-developed solar power system, the actual cost capitalized is the amount of the expenditure incurred for the application of the feed-in tariff ("FIT") or other similar contracts, permits, consents, construction costs, interest costs capitalized, and other costs capitalized. For a solar power system acquired from third parties, the initial costs include the

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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

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**2. SUMMARY OF PRINCIPAL ACCOUNTING POLICIES (Continued)**

consideration transferred and certain direct acquisition costs. Expenditures for major additions and improvements are capitalized and minor replacements, maintenance, and repairs are charged to expense as incurred.

When solar power systems is retired, or otherwise disposed of, the cost and accumulated depreciation is removed from the balance sheets and any resulting gain or loss is included in the results of operations for the respective period. Depreciation is recognized using the straight-line method over the estimated useful lives of the solar power systems of 20 to 25 years.

**(p) Intangible assets**

Intangible assets primarily represent the technical know-how and computer software purchased from third parties. Intangible assets are recorded at fair value at the time of acquisition less accumulated amortization, if applicable. Amortization is recorded according to the following table on a straight-line basis for all intangible assets:

Power purchase agreement ("PPA")	Over the estimated useful lives
Technical know-how	10 years
Computer software	1-10 years

**(q) Prepaid land use rights**

Prepaid land use rights represent amounts paid for the Company's lease for the use right of lands located in China ("PRC") and Japan. Amounts are charged to earnings ratably over the lease periods of 20 to 50 years.

**(r) Investments in affiliates**

The Company accounts for the investments in affiliates using either the cost or equity method of accounting depending upon whether the Company has the ability to exercise significant influence over the affiliates. As part of this evaluation, the Company considers the participating and protective rights in the affiliates as well as its legal form. The Company records the cost method investments at historical cost and subsequently record any dividends received from the net accumulated earnings of the investee as income. Dividends received in excess of earnings are considered a return of investment and are recorded as reductions in the cost of the investment. The Company uses the equity method of accounting for the investments when the Company has the ability to significantly influence the operations or financial activities of the investee. The Company records the equity method investments at historical cost and subsequently adjusts the carrying amount each period for share of the earnings or losses of the investee and other adjustments required by the equity method of accounting. Dividends received from the equity method investments are recorded as reductions in the cost of such investments.

Investments are evaluated for impairment when facts or circumstances indicate that the fair value of the investment is less than its carrying value. An impairment is recognized when a decline in fair value is determined to be other-than-temporary. The Company reviews several factors to determine

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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

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(In Thousands of U.S. Dollars, unless otherwise indicated)

**2. SUMMARY OF PRINCIPAL ACCOUNTING POLICIES (Continued)**

whether a loss is other-than-temporary. These factors include, but are not limited to, the: (i) nature of the investment; (ii) cause and duration of the impairment; (iii) extent to which fair value is less than cost; (iv) financial conditions and near term prospects of the affiliates; and (v) ability to hold the security for a period of time sufficient to allow for any anticipated recovery in fair value. During the years ended December 31, 2016, 2017 and 2018, the Company recorded nil, \$3,686 and \$5,738 impairment charges on its investments, respectively.

**(s) Impairment of long-lived assets**

The Company assesses the recoverability of the carrying value of long-lived assets when an indicator of impairment has been identified. The Company reviews the long-lived assets each reporting period to assess whether impairment indicators are present. For purposes of recognition and measurement of an impairment loss, a long-lived asset or assets is 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. For long-lived assets, when impairment indicators are present, the Company compares 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. Assessments also consider changes in asset group utilization, including the temporary idling of capacity and the expected timing of placing this capacity back into production. If the sum of the expected undiscounted cash flows is less than the carrying amount of the assets, the Company will recognize an impairment loss based on the fair value of the assets. The Company recorded impairment charges for long-lived assets of \$22,757, \$11,626 and \$30,968 for the years ended December 31, 2016, 2017 and 2018, respectively.

**(t) Interest capitalization**

The Company capitalizes interest costs as part of the historical costs of acquiring or constructing certain assets during the period of time required to get the assets ready for their intended use or sell the asset to a customer. The Company capitalizes interest costs to the extent that expenditures to acquire, construct, or develop an asset have occurred and interest costs have been incurred. Interest capitalized for property, plant and equipment, or solar power systems is depreciated over the estimated useful life of the related asset, as the qualifying asset is placed into service. The interest capitalized for project assets forms part of the cost of revenues when such project assets are sold and all revenue recognition criteria are met. Interest capitalization ceases once a project is substantially complete or no longer undergoing construction activities to prepare it for its intended use.

**(u) Assets retirement obligation**

Certain jurisdictions in which the Company's project assets are located or certain land lease agreements require the removal of the solar power systems when the project is decommissioned. Assets retirement obligation ("ARO") for the estimated costs of decommissioning associated with long-lived assets at a future date are accounted for in accordance with ASC 410-20, Asset Retirement Obligations ("ASC 410-20"). ASC 410-20 requires an entity to recognize the fair value of a liability for an ARO in the period in which it is incurred and a reasonable estimate of fair value can be made. Upon initial

**CANADIAN SOLAR INC.**

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

**FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018**

**(In Thousands of U.S. Dollars, unless otherwise indicated)**

**2. SUMMARY OF PRINCIPAL ACCOUNTING POLICIES (Continued)**

recognition of a liability for an ARO, the asset retirement cost is capitalized by increasing the carrying amount of the related long-lived asset by the same amount. Over time, the liability is accreted to its expected future value, while the capitalized cost is depreciated over the useful life of the related asset. The Company's ARO included in solar power systems were \$109 and \$43 as of December 31, 2017 and 2018, respectively.

**(v) Contingencies**

Liabilities for loss contingencies arising from claims, assessments, litigation, fines, and penalties and other sources are recorded when it is probable that a liability has been incurred and the amount can be reasonably estimated. If a potential material loss contingency is not probable but is reasonably possible, or is probable but the amount cannot be estimated, then the nature of the contingent liability, together with an estimate of the range of possible loss if determinable and material, is disclosed. Legal costs incurred in connection with loss contingencies are expensed as incurred.

**(w) Income taxes**

Deferred income taxes are recognized for temporary differences between the tax basis of assets and liabilities and their reported amounts in the financial statements, net tax loss carry-forwards and credits using the enacted tax rates expected to apply to taxable income in the periods in which the deferred tax liability or asset is expected to be settled or realized. Deferred tax assets are reduced by a valuation allowance when it is more likely than not that some portion or all of the deferred tax assets will not be realized. Current income taxes are provided for in accordance with the laws of the relevant taxing authorities. Before 2016, the components of the deferred tax assets and liabilities were individually classified as current and non-current based on the characteristics of the underlying assets and liabilities, or the expected timing of their use when they did not relate to a specific asset or liability.

Income tax expense includes (i) deferred tax expense, which generally represents the net change in the deferred tax asset or liability balance during the year plus any change in valuation allowances; (ii) current tax expense, which represents the amount of tax currently payable to or receivable from a taxing authority; and (iii) non-current tax expense, which represents the increases and decreases in amounts related to uncertain tax positions from prior periods and not settled with cash or other tax attributes. The Company only recognizes tax benefits related to uncertain tax positions when such positions are more likely than not of being sustained upon examination. For such positions, the amount of tax benefit that the Company recognizes is the largest amount of tax benefit that is more than fifty percent likely of being sustained upon the ultimate settlement of such uncertain tax position. The Company records penalties and interests associated with the uncertain tax positions as a component of income tax expense.

The Company uses the flow-through method to account for investment tax credits earned on qualifying projects placed into service. Under this method the investment tax credits are recognized as a reduction to income tax expense in the year the credit arises. The use of the flow-through method also results in a basis difference from the recognition of a deferred tax liability and an immediate

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

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**2. SUMMARY OF PRINCIPAL ACCOUNTING POLICIES (Continued)**

income tax expense for reduced future tax depreciation of the related assets. Such basis differences are accounted for pursuant to the income statement method.

*(x) Revenue recognition*

The Company recognizes revenue when it satisfies a performance obligation by transferring a promised good or service to a customer.

Solar power products and materials

Solar power products, including solar modules, other solar power products, solar system kits and materials related to solar power products are transferred at a point in time when the customer obtains control of the products, which is typically upon shipment or delivery depending on the contract terms. Revenues of solar product sales also include reimbursements received from customers for shipping and handling costs. Sales agreements typically contain the assurance-type customary product warranties but do not contain any post-shipment obligations nor any return or credit provisions, see note 2 (ab) for the Company's accounting policy for warranty.

The Company assessed whether it is probable that the Company will collect substantially all of the consideration to which it will be entitled in exchange for the products that will be transferred to the customer. As of December 31, 2016, 2017 and 2018, the Company had inventories of \$5.9 million, \$7.1 million and \$9.0 million, respectively, relating to sales to customers where revenues were not recognized because the collection of payment was determined to be not probable. The delivered products remain as inventories on consolidated balance sheets, regardless of whether the control has been transferred. If the collection of payment becomes probable in the future, the Company would then recognize revenue, adjust inventories and recognize cost of revenues.

EPC and development services

The Company recognizes revenue for sale of EPC and development services over time based on the estimated progress to completion using a cost-based input method. In applying cost based input methods of revenue recognition, the Company uses the actual costs incurred relative to the total estimated costs to determine the Company's progress towards contract completion and to calculate the corresponding amount of revenue and gross profit to recognize. Cost based input methods of revenue recognition are considered a faithful depiction of the Company's efforts to satisfy EPC and development services contracts and therefore reflect the transfer of goods or services to a customer under such contracts. Costs incurred towards contract completion may include costs associated with direct materials, labor, subcontractors, and other indirect costs related to contract performance. Cost based input methods of revenue recognition require us to make estimates of net contract revenues and costs to complete the Company's projects. In making such estimates, significant judgment is required to evaluate assumptions related to the amount of net contract revenues, including the impact of any performance incentives, liquidated damages, and other payments to customers. Significant judgment is also required to evaluate assumptions related to the costs to complete the Company's projects, including materials, labor, contingencies, and other system costs.



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**2. SUMMARY OF PRINCIPAL ACCOUNTING POLICIES (Continued)**

O&M services

O&M services are transferred over time when customers receive and consume the benefits provided by the Company's performance under the terms of service arrangements. Revenues from O&M services are recognized when the work completed to date does not require re-performances and the costs of O&M services are expensed when incurred.

Solar power projects

Sales of solar power projects are recognized at a point in time when customers obtain control of solar power projects. The Company recognizes revenue for the sale of a solar power project at certain stage due to the timing of when the associated sales contract with the customer is entered into. For sales of solar power projects in which the Company obtains an interest in the project sold to the customer, the Company recognizes all of the revenue for the consideration received, including the fair value of the non-controlling interest the Company obtained, and defer any profit associated with the interest obtained.

Electricity revenue

Electricity revenue is generated primarily by the Company's solar power plants under long-term PPAs and performance based energy incentives. For electricity sold under PPAs, the Company recognizes electricity revenue based on the price stated in the PPAs when electricity has been generated and transmitted to the grid. Performance-based energy incentives are awarded under certain state programs for the delivery of renewable electricity when the conditions attached to it have been met and there is reasonable assurance that the incentives will be received. During the years ended December 31, 2016, 2017 and 2018, the Company recognized performance-based energy incentives of \$22.8 million, \$10.9 million, and \$4.7 million, respectively, related to electricity generated and recognized in revenue.

Certain PPAs are accounted for as operating leases in accordance with ASC 840-20, Operating Leases. Minimum lease payments are recognized over the term of the lease and contingent rents are recorded when the achievement of the contingency becomes probable in accordance with the U.S. GAAP. None of the Company's operating leases have minimum lease payments, so revenue from these contracts is recognized as energy and any related renewable energy attributes are delivered. During the years ended December 31, 2016, 2017 and 2018, the total lease income recognized was \$6.2 million, \$2.5 million, and \$1.5 million, respectively, related to these PPAs.

Disaggregation of Revenue

The table represents a disaggregation of revenue from contracts with customers for the years ended December 31, 2016, 2017, and 2018. See Segment Information Note 21 for details of revenues generated from each product or service and revenues generated from different geographic locations.

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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

## 2. SUMMARY OF PRINCIPAL ACCOUNTING POLICIES (Continued)

The following table represents a disaggregation of revenue recognized at a point in time or over time:

	Years Ended December 31,		
	2016	2017	2018
	(In Thousands of U.S. Dollars)		
<b>MSS:</b>			
Revenue recognized at a point in time	2,742,518	2,705,985	2,095,743
Revenue recognized over time	4,128	6,938	73,175
<b>Energy:</b>			
Revenue recognized at a point in time	25,755	633,195	1,542,906
Revenue recognized over time	80,677	44,275	32,688
	2,853,078	3,390,393	3,744,512

The Company's contract assets and liabilities are as follow:

	At December 31, 2017	At December 31, 2018	Fluctuation	%
	(In Thousands of U.S. Dollars, except percentages)			
<b>Contract Assets</b>				
Accounts receivables, unbilled	1,253	38	1,215	3,197%
<b>Contract Liabilities</b>				
Advances from customers	51,739	39,024	12,715	33%
Deferred revenue	47,854	51,381	(3,527)	(7)%
	99,593	90,405	9,188	10%

For the year ended December 31, 2018, \$70.9 million revenue is recognized from the beginning balance of contract liabilities as of January 1, 2018.

Practical Expedients and Exemptions

The Company applies the new revenue standard requirements to a portfolio of contracts (or performance obligations) with similar characteristics for transactions where it is expected that the effects on the financial statements of applying the revenue recognition guidance to the portfolio would not differ materially from applying this guidance to the individual contracts (or performance obligations) within that portfolio. Therefore, we have elected the portfolio approach in applying the new revenue guidance.

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The Company has made an accounting policy election to not assess whether promised products are performance obligations if they are immaterial in the context of the contract with the customer. If the revenue related to a performance obligation that includes products that are immaterial in the context of the contract is recognized before those immaterial products are transferred to the customer, then the related costs to transfer those products are accrued.

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CANADIAN SOLAR INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

**2. SUMMARY OF PRINCIPAL ACCOUNTING POLICIES (Continued)**

The Company does not disclose the value of unsatisfied performance obligations for (i) contracts with an original expected length of one year or less and (ii) contracts for which the Company recognizes revenue at the amount to which it has the right to invoice for services performed.

The Company generally expenses incremental costs of obtaining a contract when incurred because the amortization period would be less than one year. These incremental costs are recorded in operating expenses. Incremental costs of obtaining a contract with an amortization period more than one year are not material to the Company.

**(y) Shipping and handling costs**

Payments received from customers for shipping and handling costs are included in net revenues. Shipping and handling costs relating to sales of \$68,451, \$79,853 and \$69,855, are included in selling expenses for the years ended December 31, 2016, 2017 and 2018, respectively.

**(z) Research and development**

Costs related to the design, development, testing and enhancement of products and silicon reclamation program are included in research and development expenses. Research and development costs are expensed when incurred and amounted to \$17,407, \$28,777 and \$44,193 for the years ended December 31, 2016, 2017 and 2018, respectively.

**(aa) Other operating income, net**

Other operating income, net primarily consists of gains or losses on disposal of solar power systems and property, plant and equipment, and government grants received, and compensation from business interruption insurance.

Government grants received by the Company consist of unrestricted and restricted grants and subsidies. Unrestricted grants that allowed the Company's full discretion in utilizing the funds were recognized as other operating income upon receipt of cash and when all the conditions for their receipt have been satisfied. Restricted grants related to prepaid land use rights are recorded as deferred subsidies in other non-current liabilities and are amortized on a straight-line basis over the term of the land use right. In 2018, the Company received government grants related to land use rights of \$7,212 and amortized the deferred subsidies of \$122 into other operating income.

Before 2016, the net loss on disposal of property, plant and equipment and government grants were included in general and administrative expenses. In 2016, the Company reclassified the prior years' numbers, which are immaterial to the financial statements, to be consistent with current year's presentation.

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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

## 2. SUMMARY OF PRINCIPAL ACCOUNTING POLICIES (Continued)

The following table summarizes the Company's other operating income, net:

	Years Ended December 31,		
	2016	2017	2018
	\$	\$	\$
Net gain on disposal of solar power system	(47,899)	(27,803)	(36,098)
Net loss on disposal of property, plant and equipment	8,094	1,960	2,565
Government grants	(2,734)	(6,473)	(11,013)
Business interruption insurance compensation		(15,238)	
	(42,539)	(47,554)	(44,546)

*(ab) Warranty cost*

Before June 2009, the Company typically sold its standard solar modules with a two-year guarantee for defects in materials and workmanship and a 10-year and 25-year warranty against declines of more than 10% and 20%, respectively, from the initial minimum power generation capacity at the time of delivery. In June 2009, the Company increased its guarantee for defects in materials and workmanship to six years.

In August 2011, the Company increased its guarantee for defects in materials and workmanship to ten years and the Company warrants that, for a period of 25 years, its standard solar modules will maintain the following performance levels: (i) during the first year, the actual power output of the module will be no less than 97% of the labeled power output; (ii) from the second year to the 24th year, the actual annual power output decline of the module will be no more than 0.7%; and (iii) by the end of the 25th year, the actual power output of the module will be no less than 80% of the labeled power output.

In recent years, the Company has lengthened the warranty against decline in performance for our Dymond module and bifacial module products to 30 years.

For solar power projects built by the Company, the Company provides a limited workmanship or balance of system warranty against defects in engineering design, installation and construction under normal use, operation and service conditions for a period of up to five years following the energizing of the solar power project. In resolving claims under the workmanship or balance of system warranty, the Company has the option of remedying through repair, refurbishment or replacement of equipment. The Company has entered into similar workmanship warranties with its suppliers to back up its warranties.

The Company maintains warranty reserves to cover potential liabilities that could arise under these guarantees and warranties. Due to limited warranty claims to date, the Company accrues the estimated costs of warranties based on an assessment of its competitors' and its own actual claim history, industry-standard accelerated testing, estimates of failure rates from the Company's quality review, and other assumptions that the Company believes to be reasonable under the circumstances. Actual warranty costs are accumulated and charged against the accrued warranty liability. To the extent that accrual for warranty costs differs from the estimates, the Company will prospectively revise its accrual

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**CANADIAN SOLAR INC.**

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

**FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018**

**(In Thousands of U.S. Dollars, unless otherwise indicated)**

**2. SUMMARY OF PRINCIPAL ACCOUNTING POLICIES (Continued)**

rate. The Company currently records a 1% warranty provision against the revenue for sales of solar power products.

The Company has entered into agreements with a group of insurance companies with high credit ratings to back up its warranties. Under the terms of the insurance policies, which are designed to match the terms of our solar module product warranty policy, the insurance companies are obliged to reimburse the Company, subject to certain maximum claim limits and certain deductibles, for the actual product warranty costs that the Company incurs under the terms of our solar module product warranty policy. The Company records the insurance premiums initially as prepaid expenses and amortizes them over the respective policy period of one year. The unamortized carrying amount is \$2,850 and \$1,286 as of December 31, 2017 and 2018, respectively and was included as a component of prepaid expenses and other current assets.

The warranty obligations the Company records relate to defects that existed when the product was sold to the customer. The event which the Company is insured against through its insurance policies is the sale of products with these defects. Accordingly, the Company views the insured losses attributable to the shipment of defective products covered under its warranty as analogous to potential claims, or claims that have been incurred as of the product ship date, but not yet reported. The Company expects to recover all or a portion of the cost of its obligations with respect to the defective products through insurance claims. Therefore, the Company's accounting policy is to record an asset for the amount determined to be probable of recovery from the insurance claims (not to exceed the amount of the total losses incurred), consistent with the guidance set forth at ASC 410-30.

The Company considers the following factors in determining whether an insurance receivable that is probable and recoverability can be reasonably estimated: (i) reputation and credit rating of the insurance company; (ii) comparison of the solar module product warranty policy against the terms of the insurance policies, to ensure valid warranty claims submitted by customers will be covered by the policy and therefore reimbursed by the insurance companies; and (iii) with respect to specific claims submitted, written communications from the insurance company are monitored to ensure the claim has been promptly submitted to and accepted by the insurance company, and reimbursements have been subsequently collected. The successfully processed claims provide further evidence that the insurance policies are functioning as anticipated.

To the extent uncertainties regarding the solvency of insurance carriers or the legal sufficiency of insurance claims (including if they became subject to litigation) were to arise, the Company will establish a provision for uncollectible amounts based on the specific facts and circumstances. To date, no provision had been determined to be necessary. In addition, to the extent that accrual for warranty costs differs from the estimates and the Company prospectively changes its accrual rate, this change may result in a change to the amount expected to be recovered from insurance.

As the warranty obligation and related recovery asset do not meet the criteria for offsetting, the gross amounts are reported in the Company's consolidated balance sheets. The asset is expected to be realized over the life of the warranty obligation, which is 25 or 30 years and is treated as a non-current asset consistent with the underlying warranty obligation. When a specific claim is submitted, and the corresponding insurance proceeds will be collected within twelve months of the balance sheet date, the

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**CANADIAN SOLAR INC.**

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

**FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018**

**(In Thousands of U.S. Dollars, unless otherwise indicated)**

**2. SUMMARY OF PRINCIPAL ACCOUNTING POLICIES (Continued)**

Company will reclassify that portion of the receivable as being current. The insurance receivable amounts were \$74,872 and \$75,617 as of December 31, 2017 and 2018, respectively, and were included as a component of other non-current assets.

The Company made downward adjustments to its accrued warranty costs of \$9,319 and other non-current assets of \$5,634, for the year ended December 31, 2018, to reflect the general declining trend of the average selling price of solar modules, which is a primary input into the estimated warranty costs. Accrued warranty costs (net effect of adjustments) of \$9,817, \$19,793 and \$13,188 are included in cost of revenues for the years ended December 31, 2016, 2017 and 2018, respectively.

***(ac) Foreign currency translation***

The United States dollar ("U.S. dollar" or "\$"), the currency in which a substantial amount of the Company's transactions are denominated, is used as the functional and reporting currency of CSI. Monetary assets and liabilities denominated in currencies other than the U.S. dollar are translated into U.S. dollars at the rates of exchange ruling at the balance sheet date. Transactions in currencies other than the U.S. dollar during the year are converted into the U.S. dollar at the applicable rates of exchange prevailing on the transaction date. Transaction gains and losses are recognized in the consolidated statements of operations. Gains and losses on intra-entity foreign currency transactions that are of a long-term-investment nature (that is, settlement is not planned or anticipated in the foreseeable future) between consolidated entities are not recognized in earnings, but are included as a component of other comprehensive income.

The financial records of certain of the Company's subsidiaries are maintained in local currencies other than the U.S. dollar, such as Renminbi ("RMB"), Euro, Canadian dollar ("CAD"), Japanese yen and British pound ("GBP"), which are their functional currencies. Assets and liabilities are translated at the exchange rates at the balance sheet date, equity accounts are translated at historical exchange rates and revenues, expenses, gains and losses are translated using the average rate for the year. Translation adjustments are reported as foreign currency translation adjustment and are shown as a separate component of other comprehensive income in the statements of comprehensive income.

***(ad) Comprehensive income***

Comprehensive income includes all changes in equity except those resulting from investments by owners and distributions to owners. For the years presented, total comprehensive income included (i) net income, (ii) foreign currency translation adjustments, (iii) gains and losses on intra-entity foreign currency transactions that are of a long-term-investment nature (that is, settlement is not planned or anticipated in the foreseeable future) between consolidated entities and (iv) the unrealized gains or losses (effective portion) on derivative instruments that qualify for and have been designated as cash flow hedges.

***(ae) Foreign currency risk***

The majority of the Company's sales in 2016, 2017 and 2018 were denominated in U.S. dollars, Renminbi and Japanese yen, with the remainder in other currencies such as Euros, Brazilian reals and

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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

**2. SUMMARY OF PRINCIPAL ACCOUNTING POLICIES (Continued)**

Canadian dollars. The Company's Renminbi costs and expenses are primarily related to the sourcing of solar cells, silicon wafers and silicon, other raw materials, including aluminum and silver paste, toll manufacturing fees, labor costs and local overhead expenses within the PRC. From time to time, the Company enters into loan arrangements with commercial banks that are denominated primarily in Renminb, U.S. dollars and Japanese yen. Most of its cash and cash equivalents and restricted cash are denominated in Renminbi. Fluctuations in exchange rates, particularly between the U.S. dollar, Renminbi, British pound, Canadian dollar, Japanese yen and Euro, may result in foreign exchange gains or losses. Since 2008, the Company has hedged part of its foreign currency exposures against the U.S. dollar using foreign currency forward or option contracts.

*(af) Concentration of credit risk*

Financial instruments that potentially expose the Company to concentrations of credit risk consist primarily of cash and cash equivalents, restricted cash, accounts receivable, advances to suppliers and amounts due from related parties.

All of the Company's cash and cash equivalents are held with financial institutions that Company management believes to have high credit quality.

The Company conducts credit evaluations of customers and generally does not require collateral or other security from its customers. The Company establishes an allowance for doubtful accounts primarily based upon the age of the receivables and factors surrounding the credit risk of specific customers. With respect to advances to suppliers, such suppliers are primarily suppliers of raw materials. The Company performs ongoing credit evaluations of its suppliers' financial conditions. The Company generally does not require collateral or security against advances to suppliers, however, it maintains a reserve for potential credit losses and such losses have historically been within management's expectation.

The prepayments made by the Company are unsecured and expose the Company to supplier credit risk. As of December 31, 2017 and 2018, gross prepayments made to individual suppliers in excess of 10% of total advances to suppliers are as follows:

	At December 31, 2017	At December 31, 2018
	\$	\$
Supplier A	18,260	18,260

*(ag) Fair value of financial instruments*

The Company applies authoritative guidance for fair value measurements for its financial assets and liabilities. The guidance defines fair value as an exit price representing the amount that would be received upon the sale of an asset or paid to transfer a liability in an orderly transaction between market participants. The guidance also establishes a fair value hierarchy, which prioritized the inputs



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CANADIAN SOLAR INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

**2. SUMMARY OF PRINCIPAL ACCOUNTING POLICIES (Continued)**

used in measuring fair value. The standard describes three levels of inputs that may be used to measure fair value:

*Level 1* Observable inputs that reflect quoted prices (unadjusted) for identical assets or liabilities in active markets. The Company's restricted cash balance for all periods presented uses level one fair value inputs.

*Level 2* Inputs reflect quoted prices for identical assets or liabilities in markets that are not active; quoted prices for similar assets or liabilities in active markets; inputs other than quoted prices that are observable for the assets or liabilities; or inputs that are derived principally from or corroborated by observable market data by correlation or other means.

*Level 3* Unobservable inputs reflecting the Company's own assumptions incorporated in valuation techniques used to determine fair value. These assumptions are required to be consistent with market participant assumptions that are reasonably available.

**(ah) Derivatives instruments and hedging activity**

The Company's primary objective for holding derivative financial instruments is to manage risks. Depending on the terms of the specific derivative instruments and market conditions, some of the Company's derivative instruments may be assets and others liabilities at any particular point in time. The recognition of gains or losses resulting from changes in fair value of these derivative instruments is based on the use of each derivative instrument and whether it qualifies for hedge accounting.

The Company enters into derivatives to hedge its foreign currency risk exposure to losses from price adjustments of electricity and interest rate risk. When the Company determines to designate a derivative instrument as a cash flow hedge, the Company formally documents the hedging relationship and its risk management objective and strategy for undertaking the hedge, the hedging instrument, the hedged item, the nature of the risk being hedged, how the hedging instrument's effectiveness in offsetting the hedged risk will be assessed, and a description of the method of measuring ineffectiveness. The Company also formally assesses, both at the hedge's inception and on an ongoing basis, whether the derivative that is used in hedging transactions is highly effective in offsetting changes in cash flows of hedged items. The effective portion of gains and losses on derivatives designated as cash flow hedges are initially deferred in other comprehensive income before being recognized in the statements of operations in the same period as the hedged transactions are reflected in earnings. Gains and losses on derivatives that are not designated or fail to qualify as effective hedges are recognized in the statements of operations as incurred.

Fair value of the derivative instruments is determined using pricing models developed based on the underlying price of the hedged items. The values are also adjusted to reflect nonperformance risk of the counterparty and the Company, as necessary.

**(ai) Earnings per share**

Basic earnings per share is computed by dividing income attributable to holders of common shares by the weighted average number of common shares outstanding during the year. Diluted earnings per

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CANADIAN SOLAR INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

**2. SUMMARY OF PRINCIPAL ACCOUNTING POLICIES (Continued)**

common share reflects the potential dilution that could occur if securities or other contracts to issue common shares were exercised or converted into common shares. Common share equivalents are not included in the calculation of dilutive earnings per share if their effects are anti-dilutive.

*(aj) Share-based compensation*

The Company's share-based compensation with employees, such as share options, restricted shares and restricted share units ("RSUs"), is measured at the grant date, based on the fair value of the award, and is recognized as compensation expense, net of estimated forfeitures, over the period during which an employee is required to provide service in exchange for the award, which is generally the vesting period.

*(ak) Recently issued accounting pronouncements*

In May 2014, the FASB issued ASU 2014-09, Revenue from Contracts with Customers (Topic 606). Under the standard, revenue is recognized when a customer obtains control of promised goods or services in an amount that reflects the consideration the entity expects to receive in exchange for those goods or services. In addition, the standard requires disclosure of the nature, amount, timing, and uncertainty of revenue and cash flows arising from contracts with customers. In 2018, the Company adopted ASU 2014-09 and all the related amendments using the modified retrospective method.

This adoption primarily affected the Company's solar power projects sales arrangements previously accounted for under ASC 360-20, which had required the Company to evaluate whether such arrangements had any forms of continuing involvement that may have affected the revenue or profit recognition of the transactions, including arrangements with prohibited forms of continuing involvement. When such forms of continuing involvement were present, the Company reduced the potential profit on the applicable project sale by the Company's maximum exposure to loss. The Company's adoption of ASU 2014-09, which supersedes the real estate sales guidance under ASC 360-20, generally requires the Company to recognize revenue and profit from the Company's solar power projects sales arrangements earlier and in a more linear fashion than the Company's historical practice under ASC 360-20, including the estimation of certain profits that would otherwise have been deferred.

The reported results for year 2018 reflect the adoption of ASC 606, while the reported results for year 2016 and 2017 were prepared under the previous revenue recognition guidance. As a result of adoption, the Company recognized an increase of \$1.3 million to the beginning balance of retained earnings on January 1, 2018, related to variable consideration recognized for sales of solar power projects in prior periods.

Following the adoption of ASU 2014-09, the revenue recognition for other sales arrangements, including sales of solar power products, EPC and development services, remained materially consistent with historical practice. See note 2(x) "Revenue recognition" for further discussion on effects of adoption on the principal accounting policies.

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**CANADIAN SOLAR INC.**

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

**FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018**

**(In Thousands of U.S. Dollars, unless otherwise indicated)**

**2. SUMMARY OF PRINCIPAL ACCOUNTING POLICIES (Continued)**

In February 2016, the FASB issued ASU 2016-02, "Leases (Topic 842)". The new standard, requires the recognition of right-of-use ("ROU") assets and lease liabilities on the balance sheet for operating leases. Leases will be classified as either finance or operating. The lease classification affects the pattern of expense recognition in the statement of operations. Under the new standard, disclosures are required to enable users of financial statements to assess the amount, timing and uncertainty of cash flows arising from leases. In July 2018, the FASB issued ASU 2018-11, "Leases (Topic 842) Targeted Improvements", which provided an optional transition method to apply the new lease requirements through a cumulative-effect adjustment in the period of adoption.

The Company adopted the new standard on January 1, 2019 using this optional transition method to all leases existing at the date of initial application. In addition, the Company elected the transition practical referred to as the "package of three", that must be taken together and allows entities to (1) not reassess whether existing contracts contain leases, (2) carryforward the existing lease classification, and (3) not reassess initial direct costs associated with existing leases.

The Company expects material changes to its consolidated balance sheet through the recognition of right-of-use assets and lease liabilities primarily related to office properties which are subject to operating leases, but does not expect a significant impact on our results of operations or cash flows.

In June 2016, the FASB issued ASU 2016-13, "Financial Instruments - Credit Losses (Topic 326)". The pronouncement changes the impairment model for most financial assets, and will require the use of an "expected loss" model for instruments measured at amortized cost. Under this model, entities will be required to estimate the lifetime expected credit loss on such instruments and record an allowance to offset the amortized cost basis of the financial asset, resulting in a net presentation of the amount expected to be collected on the financial asset. This pronouncement is effective for fiscal years, and for interim periods within those fiscal years, beginning after December 15, 2019. The Company does not expect a material impact to its consolidated financial statement upon adoption of this ASU.

In November 2016, the FASB issued ASU 2016-18, "Statement of Cash Flows (Topic 230): Restricted Cash," which clarifies the presentation of restricted cash and restricted cash equivalents in the statements of cash flows. Under ASU 2016-18, restricted cash and restricted cash equivalents are included with cash and cash equivalents when reconciling the beginning-of-period and end-of-period total amounts shown on the statements of cash flows. The Company has applied this ASU retrospectively and included restricted cash with cash and cash equivalents when reconciling the beginning-of-period and end-of-period total amounts shown on the statements of cash flows.

In January 2017, the FASB issued ASU 2017-04, "Intangibles - Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment", which removes the requirement to compare the implied fair value of goodwill with its carrying amount as part of step 2 of the goodwill impairment test. As a result, under the ASU, an entity should perform its annual, or interim, goodwill impairment test by comparing the fair value of a reporting unit with its carrying amount and should recognize an impairment charge for the amount by which the carrying amount exceeds the reporting unit's fair value; however, the loss recognized should not exceed the total amount of goodwill allocated to that reporting unit. An entity should consider income tax effects from any tax deductible goodwill on the carrying amount of the reporting unit when measuring the goodwill impairment loss, if applicable. For public business entities that are SEC filers, the guidance is effective for fiscal years beginning after

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**CANADIAN SOLAR INC.**

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

**FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018**

**(In Thousands of U.S. Dollars, unless otherwise indicated)**

**2. SUMMARY OF PRINCIPAL ACCOUNTING POLICIES (Continued)**

December 15, 2019. Early adoption is permitted. The Company does not expect the adoption to have a significant impact to its consolidated financial statements.

In August 2017, the FASB issued ASU 2017-12, "Derivatives and Hedging (Topic 815) Targeted Improvements to Accounting for Hedging Activities". ASU 2017-12 expands and refines hedge accounting for both nonfinancial and financial risk components and aligns the recognition and presentation of the effects of the hedging instrument and the hedged item in the financial statements. Subject matters addressed include risk component hedging, accounting for the hedged item in fair value hedges of interest rate risk, recognition and presentation of the effects of hedging instruments, amounts excluded from the assessment of hedge effectiveness, and effectiveness testing. All transition requirements and elections should be applied to existing hedging relationships as of the date of adoption and reflected as of the beginning of the fiscal year of adoption. ASU 2017-12 is effective for fiscal years and interim periods within those years beginning after December 15, 2018, and early adoption is permitted. The Company is currently evaluating the impact to the consolidated financial statements and associated disclosures.

In August 2018, the FASB issued ASU 2018-13, "Fair Value Measurement (Topic 820): Disclosure Framework Changes to the Disclosure Requirements for Fair Value". ASU 2018-13 removes and modifies existing disclosure requirements on fair value measurement, namely regarding transfers between levels of the fair value hierarchy and the valuation processes for Level 3 fair value measurements. Additionally, ASU 2018-13 adds further disclosure requirements for Level 3 fair value measurements, specifically changes in unrealized gains and losses and other quantitative information. ASU 2018-13 is effective for fiscal years and interim periods within those fiscal years, beginning after December 15, 2019, with early adoption permitted. The Company is in the process of evaluating the impact of this new guidance on its consolidated financial statements and associated disclosures.

In October 2018, the FASB issued ASU 2018-17, "Consolidation (Topic 810): Targeted Improvements to Related Party Guidance for Variable Interest Entities", which expands variable interests to indirect interests held through related parties under common control. ASU 2018-17 is effective for fiscal years and interim periods within those fiscal years, beginning after December 15, 2019, with early adoption permitted. It is required to be applied retrospectively with a cumulative-effect adjustment to retained earnings at the beginning of the earliest period presented. The Company is in the process of evaluating the impact of this new guidance on its consolidated financial statements and associated disclosures.

**3. ALLOWANCE FOR DOUBTFUL ACCOUNTS**

Allowance for doubtful accounts are comprised of allowances for accounts receivable trade, advances to suppliers and other receivables.

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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

**3. ALLOWANCE FOR DOUBTFUL ACCOUNTS (Continued)**

An analysis of allowances for accounts receivable, trade for the years ended December 31, 2016, 2017 and 2018 is as follows:

	Years Ended December 31,		
	2016	2017	2018
	\$	\$	\$
Beginning of the year	28,156	26,119	32,941
Allowances made (reversed) during the year, net	(854)	5,345	869
Accounts written-off against allowances	(47)	(174)	(297)
Foreign exchange effect	(1,136)	1,651	(780)
Closing balance	26,119	32,941	32,733

An analysis of allowances for advances to suppliers for the years ended December 31, 2016, 2017 and 2018 is as follows:

	Years Ended December 31,		
	2016	2017	2018
	\$	\$	\$
Beginning of the year	28,629	19,527	18,762
Allowances made (reversed) during the year, net	(5,427)	(833)	2,287
Accounts written-off against allowances	(3,644)		
Foreign exchange effect	(31)	68	(123)
Closing balance	19,527	18,762	20,926

An analysis of allowances for other receivables for the years ended December 31, 2016, 2017 and 2018 is as follows:

	Years Ended December 31,		
	2016	2017	2018
	\$	\$	\$
Beginning of the year	3,885	9,251	10,349
Allowances made (reversed) during the year, net	5,954	549	(175)
Foreign exchange effect	(588)	549	(470)
Closing balance	9,251	10,349	9,704



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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

**4. INVENTORIES**

Inventories consist of the following:

	At December 31, 2017	At December 31, 2018
	\$	\$
Raw materials	90,299	47,759
Work-in-process	59,576	46,817
Finished goods	196,217	167,446
	346,092	262,022

In 2016, 2017 and 2018, inventory was written down by \$19,467, \$17,820 and \$14,646, respectively, to reflect the lower of cost and net realizable value.

**5. PROJECT ASSETS**

Project assets consist of the following:

	At December 31, 2017	At December 31, 2018
	\$	\$
Project assets Acquisition cost	40,094	51,635
Project assets EPC and other cost	1,631,418	1,234,128
	1,671,512	1,285,763

Current portion	1,523,342	933,563
Non-current portion	148,170	352,200

The Company recorded impairment charges and write-off for project assets of \$2,952, nil and \$9,016 for the years ended December 31, 2016, 2017 and 2018, respectively.

**6. PROPERTY, PLANT AND EQUIPMENT, NET**

Property, plant and equipment, net consist of the following:

	At December 31, 2017	At December 31, 2018
	\$	\$
Buildings	340,215	441,975
Leasehold improvements	11,498	13,058

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Machinery	698,150	785,874
Furniture, fixtures and equipment	50,310	64,135
Motor vehicles	5,782	6,100
Land	18,647	18,810
	1,124,602	1,329,952
Accumulated depreciation	(462,128)	(489,927)
Impairment	(7,933)	(30,503)
	654,541	809,522
Construction in process	92,694	75,464
Property, plant and equipment, net	747,235	884,986

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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

**6. PROPERTY, PLANT AND EQUIPMENT, NET (Continued)**

Depreciation expense of property, plant and equipment was \$72,813, \$88,931 and \$120,834 for the years ended December 31, 2016, 2017 and 2018, respectively. Construction in process primarily represents production facilities under construction and the machinery under installation.

**7. SOLAR POWER SYSTEMS, NET**

Solar power systems, net consist of the following:

	At December 31, 2017	At December 31, 2018
	\$	\$
Solar power systems in operation	74,488	66,641
Solar power systems under construction	4,710	4,484
Accumulated depreciation	(15,234)	(16,227)
Solar power systems, net	63,964	54,898

Depreciation expense of solar power systems was \$16,492, \$5,683 and \$3,756 for the years ended December 31, 2016, 2017 and 2018, respectively.

**8. INTANGIBLE ASSETS, NET**

The following table summarizes the Company's intangible assets:

At December 31, 2018	Gross Carrying Amount	Accumulated Amortization	Net
	\$	\$	\$
Technical know-how	2,369	(1,458)	911
Computer software	25,882	(11,890)	13,992
Total intangible assets, net	28,251	(13,348)	14,903

At December 31, 2017	Gross Carrying Amount	Accumulated Amortization	Net
	\$	\$	\$
Technical know-how	2,334	(1,371)	963

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Computer software	20,883	(10,860)	10,023
Total intangible assets, net	23,217	(12,231)	10,986

Amortization expense for the years ended December 31, 2016, 2017 and 2018 were \$6,544, \$4,659 and \$4,666, respectively.

Amortization expenses of the above intangible assets are expected to be approximately \$4.0 million, \$3.5 million, \$3.0 million, \$2.5 million and \$1.9 million for the years ended December 31, 2019, 2020, 2021, 2022, 2023 and thereafter, respectively.

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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

## 9. FAIR VALUE MEASUREMENT

The Company measures at fair value its financial assets and liabilities by using a fair value hierarchy that prioritizes the inputs to valuation techniques used to measure fair value. Fair value is the price that would be received from the sale of an asset or paid to transfer a liability (i.e., an exit price) on the measurement date in an orderly transaction between market participants.

As of December 31, 2017 and 2018, the following financial assets and liabilities were measured at fair value on a recurring basis in periods subsequent to their initial recognition using the type of inputs shown as follows:

At December 31, 2018	Total Fair Value and Carrying Value on the Balance Sheets	Fair Value Measurements Using		
		Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
	\$	\$	\$	\$
<b>Assets:</b>				
Foreign exchange forward contracts	4,166		4,166	
Foreign exchange option contracts	1		1	
Interest rate swap	3,810		3,810	
<b>Total assets</b>	<b>7,977</b>		<b>7,977</b>	
<b>Liabilities:</b>				
Foreign exchange forward contracts	13,480		13,480	
Foreign exchange option contracts	218		218	
<b>Total liabilities</b>	<b>13,698</b>		<b>13,698</b>	

At December 31, 2017	Total Fair Value and Carrying Value on the Balance Sheets	Fair Value Measurements Using		
		Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
	\$	\$	\$	\$
<b>Assets:</b>				
Foreign exchange forward contracts	12,316		12,316	
Commodity hedge	3,416		3,416	
Interest rate swap	11,379		11,379	

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Total assets	27,111	27,111
Liabilities:		
Interest rate swap	1,359	1,359
Foreign exchange forward contracts	5,121	5,121
Total liabilities	6,480	6,480

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**CANADIAN SOLAR INC.**

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

**FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018**

**(In Thousands of U.S. Dollars, unless otherwise indicated)**

**9. FAIR VALUE MEASUREMENT (Continued)**

***Foreign exchange option and forward contracts***

The Company entered into certain foreign currency derivative contracts to protect against volatility of future cash flows caused by the changes in foreign exchange rates. The foreign currency derivative contracts do not qualify for hedge accounting and, as a result, the changes in fair value of the foreign currency derivative contracts are recognized in the consolidated statements of operations.

The Company's foreign currency derivative instruments relate to foreign exchange options or forward contracts involving major currencies such as Canadian dollars, British pounds, European euros and Japanese yen. Since its derivative instruments are not traded on an exchange, the Company values them using valuation models. Interest rate yield curves and foreign exchange rates are the significant inputs into these valuation models. These inputs are observable in active markets over the terms of the instruments the Company holds, and accordingly, the fair value measurements are classified as Level 2 in the hierarchy. The Company considers the effect of its own credit standing and that of its counterparties in valuations of its derivative financial instruments.

***Commodity hedge***

During the year ended December 31, 2015, the Company entered into a fixed for floating energy commodity swap with a financial institution to hedge cash flows associated with electricity sales of the Astoria project in the U.S. for the period between expected COD and commencement of the long term PPA with the off taker in January 2019. The swap contract was designated as a cash flow hedge at inception and is anticipated to be effective through its two-year term that ends on December 31, 2018. The fair value of the swap contract was \$3,416 and \$nil, an asset position, recorded in derivative assets on the balance sheet at December 31, 2017 and 2018, respectively. The effective portion of gains and losses on derivatives designated as cash flow hedges are initially deferred in other comprehensive income before being recognized in the statements of operations in the same period as the hedged transactions are reflected in earnings. Gains and losses on derivatives that are not designated or fail to qualify as effective hedges are recognized in the statements of operations as incurred.

Fair value of the commodity swap is determined using pricing models developed based on the underlying commodity price of electricity and adjusted to reflect nonperformance risk of the counterparty and the Company, as necessary, which are considered Level 2 inputs.

***Interest rate swap***

During the year ended December 31, 2016, the Company entered into fixed for floating interest rate swaps with two financial institutions to hedge the interest rate risk on its project debts obtained in the United Kingdom with notional amount totaling GBP78.4 million (\$96.8 million), which will expire between 2033 and 2034. The interest rate swaps had been designated as cash flow hedges for accounting purposes.

Together with interest rate swap contracts of total notional amounts of approximately \$399.0 million entered into for Recurrent projects upon the exercise of the swaption and designated as cash flow hedges, the total estimated fair value of the swap contracts was recorded as derivative assets

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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

## 9. FAIR VALUE MEASUREMENT (Continued)

of \$3,810 and derivative liabilities of \$nil on the balance sheet as of December 31, 2018. The effective portion of gains and losses on derivatives designated as cash flow hedges are initially deferred in other comprehensive income before being recognized in the statements of operations in the same period as the hedged transactions are reflected in earnings. Gains and losses on derivatives that are not designated or fail to qualify as effective hedges are recognized in the statements of operations as incurred.

The estimated fair value of interest rate swaps was measured based on observable market data, which are considered Level 2 inputs.

The fair value of derivative instruments on the consolidated balance sheets as of December 31, 2017 and 2018 and the effect of derivative instruments on the consolidated statements of operations for the years ended December 31, 2016, 2017 and 2018 are as follows:

	Fair Value of Derivative Assets			
	At December 31, 2017		At December 31, 2018	
	Balance Sheet Location	Fair Value \$	Balance Sheet Location	Fair Value \$
Foreign exchange forward contracts	Derivative assets current	12,316	Derivative assets current	4,166
Foreign exchange option contracts	Derivative assets current		Derivative assets current	1
Commodity hedge	Derivative assets current	3,416	Derivative assets current	
Interest rate swap	Derivative assets current	468	Derivative assets current	594
Commodity hedge	Derivative assets non-current		Derivative assets non-current	
Interest rate swap	Derivative assets non-current	10,911	Derivative assets non-current	3,216
	Total	27,111	Total	7,977

## Fair Value of Derivative Liabilities

	Fair Value of Derivative Liabilities			
	At December 31, 2017		At December 31, 2018	
	Balance Sheet Location	Fair Value \$	Balance Sheet Location	Fair Value \$
Foreign exchange forward contracts	Derivative liabilities current	5,120	Derivative liabilities current	13,480
Foreign exchange option contracts	Derivative liabilities current		Derivative liabilities current	218
Warrants	Derivative liabilities current		Derivative liabilities current	
Interest rate swap	Derivative liabilities current	1,001	Derivative liabilities current	
Interest rate swap	Derivative liabilities non-current		Derivative liabilities non-current	
		359		

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Total

6,480 Total

13,698

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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

## 9. FAIR VALUE MEASUREMENT (Continued)

	Location of Gain (Loss) Recognized in Statements of Operations	Amount of Gain (Loss) Recognized in Statements of Operations		
		Years Ended December 31		
		2016	2017	2018
		\$	\$	\$
Foreign exchange forward contracts	Gain (loss) on change in fair value of derivatives	4,798	(2,638)	(16,414)
Foreign exchange option contracts	Gain (loss) on change in fair value of derivatives			(2,023)
Warrants	Gain (loss) on change in fair value of derivatives	24,554	711	
Commodity hedge	Gain (loss) on change in fair value of derivatives	75		
Interest rate swaption	Gain (loss) on change in fair value of derivatives	(4,335)		
Interest rate swap	Gain (loss) on change in fair value of derivatives	2,230	1,655	(793)
	Total	27,322	(272)	(19,230)

The Company measures certain long-lived assets or long-term investments at fair value on a non-recurring basis in periods after initial measurement in circumstances when the fair value of such assets is below its recorded cost and impairment is required.

The Company recorded impairment charges for certain manufacturing asset group of \$22,757, \$11,626 and \$30,968 for the years ended December 31, 2016, 2017 and 2018, respectively. The fair value of these assets was measured based on prices offered by unrelated third-party willing buyers and classified as level 3 fair value measurements as the offering prices are not observable. The impairment was recorded in general and administrative expenses of the MSS segment.

The Company also holds financial instruments that are not recorded at fair value in the consolidated balance sheets, but whose fair value is required to be disclosed under the U.S. GAAP.

The carrying values of cash and cash equivalents, restricted cash, trade receivables, billed and unbilled, amounts due from related parties, accounts payables, short-term notes payable, amounts due to related parties and short-term borrowings approximate their fair values due to the short-term maturity of these instruments. Long-term borrowings were \$404,341 and \$393,614 as of December 31, 2017 and 2018, respectively, which approximate their fair values since most of the borrowings contain variable interest rates. The fair value of long-term borrowings was measured based on discounted cash flow approach, which is classified as level 2 as the key inputs can be corroborated with market data.

The carrying value of the Company's outstanding convertible notes was \$126.5 million and \$127.4 million as of December 31, 2017 and 2018, respectively, which approximates the fair value.



**10. VARIABLE INTEREST ENTITIES**

Since 2016, the Company, through its wholly owned subsidiary, CSE Japan Investment Company Limited, entered into silent partnership agreements with various Japan project companies, for the purpose of raising project finance bonds arranged by Goldman Sachs Japan Co., Ltd. Under the silent partnership agreements, the project entities are considered VIEs in which the Company has no equity interests, but is entitled to substantially all of the economic interests of the projects. In addition, the Company has the power to make decisions over the activities that most significantly impact the

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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

**10. VARIABLE INTEREST ENTITIES (Continued)**

economic performance of the projects under the asset management agreement signed simultaneously between the project companies and Canadian Solar Project K.K, a subsidiary of the Group. As such, the Company concluded it was the primary beneficiary of the project companies and thus these project companies were accounted for as consolidated VIEs for the year ended December 31, 2017 and 2018.

As of December 31, 2018, the carrying amounts and classifications of the consolidated VIEs' assets and liabilities, excluding intercompany balances which are eliminated upon consolidation, included in the Company's consolidated balance sheet are as follows:

	At December 31, 2017	At December 31, 2018
	\$	\$
Cash and cash equivalents	33,993	13,063
Accounts receivable trade, net of allowance	2,787	446
Value added tax recoverable	4,772	9
Advances to suppliers current, net of allowance	16	5
Project assets current	171,898	
Prepaid expenses and other current assets	12,605	23
<b>Total current assets</b>	<b>226,071</b>	<b>13,546</b>
Prepaid land use rights	22,927	3,906
Project assets non-current		185,448
Other non-current assets	2,708	4,384
<b>Total assets</b>	<b>251,706</b>	<b>207,284</b>
<b>Current liabilities:</b>		
Short-term borrowings	214,128	9,160
Accounts payable		20,333
Amounts due to related parties	272	39,072
Other payables		41
Other current liabilities	7,863	30
<b>Total current liabilities</b>	<b>222,263</b>	<b>68,636</b>
Long-term borrowings		113,973
Other non-current liabilities	6,777	
<b>Total liabilities</b>	<b>229,040</b>	<b>182,609</b>

All of the assets are restricted for settlement of the VIEs' obligations, and all of the liabilities can only be settled using VIE resources. Net income and overall cash flow activities during the year are immaterial to the consolidated financial statements.



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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

## 11. INVESTMENTS IN AFFILIATES

Investments in affiliates consist of the following:

	At December 31,			
	2017		2018	
	Carrying Value	Ownership Percentage	Carrying Value	Ownership Percentage
	\$	(%)	\$	(%)
RE Tranquillity Holdings LLC ("Tranquillity")	145,795	49		
RE Silverlake Holdings LLC ("Garland")	120,247	49		
RE Roserock Holdings LLC ("Roserock")	77,053	49	62,767	49
Suzhou Financial Leasing Co., Ltd.	14,129	6	14,361	6
Pirapora Solar Holding S.A.	6,551	20		
Canadian Solar Infrastructure Fund, Inc.	23,866	14.76	23,990	14.66
Others	26,574	21-49	24,977	21-49
Total	414,215		126,095	

*Tax equity transactions*

In 2015, the Company, through its wholly owned subsidiary, Recurrent, entered into the following tax equity transactions:

In August 2015, the Company completed the sale of 100% of the class A membership interests of RE Tranquillity Holdings LLC, the holding company of the Tranquillity project companies, to Southern Power ("Southern"), a subsidiary of Southern Company. The Company maintains 100% ownership in the class B membership interests of RE Tranquillity Holdings LLC. Southern paid the Company an initial contribution of \$100 million in cash for the class A membership interests in RE Tranquillity Holdings LLC.

In October 2015, the Company completed the sale of 100% of the class A membership interests of RE Silverlake Holdings LLC, the holding company of the Garland project companies, to Southern. The Company maintains 100% ownership in the class B membership interests of RE Silverlake Holdings LLC. Southern paid the Company an initial contribution of \$49 million in cash for the class A membership interests in RE Silverlake Holdings LLC.

In December 2015, the Company completed the sale of 100% of the class A membership interests of RE Roserock Holdings LLC, the holding company of the Roserock project companies, to Southern. The Company maintains 100% ownership in the class B membership interests of RE Roserock Holdings LLC. Southern paid the Company an initial contribution of \$45 million in cash for the class A membership interests in RE Roserock Holdings LLC.

Under the LLC agreements, the class A membership interests and class B membership interests will receive 51% and 49%, respectively, of future cash flow distributions, and Southern is entitled to substantially all of the projects' federal tax benefits.

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CANADIAN SOLAR INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

**11. INVESTMENTS IN AFFILIATES (Continued)**

Effective with the sale of the class A membership interests, the Company ceased having controlling financial interests in Tranquillity, Roserock and Garland, and accounted for the transactions as partial sales of real estates under ASC360-20. The Company also considered that it would continue to exercise significant influences over its retained interests in and has accounted for these interests pursuant to the equity method of accounting.

Under this method, the Company recognizes its equity in earnings attributable to class B membership interests according to its proportionate share of investees' operating cash flows. Additionally, the Company amortizes the basis difference between the cost of investment and its proportionate share of the investees' net assets over the estimated lives of the related assets.

In connection with these sales to Southern in 2015, \$190.4 million was recognized as revenue, and with the loss of controlling financial interests in Tranquillity, Garland and Roserock, the Company derecognized net assets of \$93.9 million, \$56.4 million and \$23.5 million, respectively, and recognized its class B membership interests in investments in affiliates.

Subsequent to sales of the class A membership interests, the Company further contributed nil and \$5,908 million to the projects in 2017 and 2018, respectively.

In October 2018, the Company sold the 100% ownership in the Class B membership interest of Tranquillity and Garland. The gain of the disposal was recorded in investment income.

In December 2018, the Company wrote down the class B membership interests in Roserock project to its anticipated resell value by \$5.0 million.

***Other investments***

On September 8, 2015, SZSP established an entity, Suzhou Financial Leasing Co., Ltd., for cash consideration of \$13,860, in which the Company holds 6% voting interests. One of five board members is designated by SZSP and, as such SZSP is considered having significant influence over the investee and the equity method is used in this investment.

On October 26, 2017, Canadian Solar Infrastructure Fund, Inc. ("CSIF") priced its initial public offering of 177,800 investment units at 100,000 Japanese yen per unit, before underwriting discounts. Of the units included in the offering, the Company purchased 25,395 units as the sponsor. In addition to initial private placement of 1,500 units and allotment of 7,000 shares on September 5, 2018, the Company has held 33,895 units as of December 31, 2018. On November 22, 2017, over-allotment issuance of 2,890 units and on October 4, 2018, over-allotment of 2,333 units was exercised by Mizuho Securities Co., Ltd. Also, on September 5, 2018, CSIF issued 46,667 investment units at 102,180 Japanese yen per unit, before underwriting discounts. A total of 231,190 units have issued by CSIF as of December 31, 2018, the Company owned 14.66% of total units. One out of the three members of the board of directors of CSIF represents the Company. The quorum for a board resolution of CSIF is a majority of the members of the board of directors, and the adoption of a resolution requires a majority of the votes presents.

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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

**11. INVESTMENTS IN AFFILIATES (Continued)**

In September 2018, the Company made full impairment charge of \$0.7 million on investment in eNow, Inc., in which the Company holds 10% voting interests, due to deterioration of the investee's financial position.

Equity in earnings (loss) of unconsolidated investees were \$(4,404), \$9,411 and \$5,908 for the years ended December 31, 2016, 2017 and 2018, respectively.

**12. BORROWINGS**

	At December 31, 2017	At December 31, 2018
	\$	\$
Bank borrowings	2,043,974	1,442,353
Analysis as:		
Short-term	829,035	808,555
Long-term, current portion	718,034	107,461
Subtotal for short-term	1,547,069	916,016
Long-term borrowings on project assets - current	142,920	208,755
Long-term, non-current portion	353,985	317,582
Borrowings from non-banking institutions	318,122	244,958
Analysis as:		
Short-term	270	48,321
Long-term, current portion	61,623	63,590
Subtotal for short-term	61,893	111,911
Long-term borrowings on project assets - current	205,873	57,015
Long-term, non-current portion	50,356	76,032
Total	2,362,096	1,687,311

As of December 31, 2018, the Company had contractual bank credit facilities of \$2,550,067 and \$706,570 was available for draw down upon demand. In addition, as of December 31, 2018, the Company also had non-binding credit facilities of \$477,973.

As of December 31, 2018, short-term borrowings of \$1,041,510 and long-term borrowings of \$285,968 were secured by property, plant and equipment with carrying amounts of \$322,544, inventories of \$67,759, prepaid land use rights of \$44,546, restricted cash of \$90,021, accounts receivable of \$263,947, equity of \$144,255 and project assets and solar power systems of \$916,490.



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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

## 12. BORROWINGS (Continued)

a)

*Short-term*

The Company's short-term borrowings consist of the following:

	At December 31, 2017	At December 31, 2018
	\$	\$
Bank borrowings		
Short-term bank borrowings secured by restricted cash	267,507	285,715
Short-term bank borrowings secured by inventories	7,652	
Short-term bank borrowings secured by prepaid land use rights and property, plant and equipment	248,502	275,000
Short-term bank borrowings secured by project assets and solar power systems	2,700	45,000
Unsecured short-term borrowings	302,674	202,840
Long-term borrowings due within one year		
Long-term borrowings due within one year secured by inventories		5,003
Long-term borrowings due within one year secured by prepaid land use rights and property, plant and equipment	8,313	21,686
Long-term borrowings due within one year secured by project assets and solar power systems	558,721	63,736
Long-term borrowings due within one year secured by restricted cash		12,493
Long-term bank borrowings due within one year secured by equity	151,000	
Unsecured long-term borrowings due within one year		4,543
	1,547,069	916,016
Borrowings from non-banking institutions		
Short-term borrowings secured by project assets	270	
Short-term borrowings secured by prepaid land use rights and property, plant and equipment		43,711
Long-term borrowings due within one year secured by project assets		23,396
Unsecured short-term borrowings		4,610
Unsecured long-term borrowings due within one year	61,623	40,194
	61,893	111,911
Total	1,608,962	1,027,927

The average interest rate on short-term borrowings was 3.31% and 4.48% per annum for the years ended December 31, 2017 and 2018, respectively.



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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

## 12. BORROWINGS (Continued)

b)

*Long-term borrowings on projects assets current*

The Company's long-term borrowings on project assets current consist of the following:

	At December 31, 2017	At December 31, 2018
	\$	\$
Bank borrowings		
Long-term borrowings on project assets-current secured by project assets	131,562	208,755
Unsecured Long-term borrowings on project assets current	11,358	
Borrowings from non-banking institutions		
Long-term borrowings on project assets-current secured by project assets	205,873	57,015
Total	348,793	265,770

Certain long-term borrowings were classified as current liabilities because these borrowings are associated with certain solar power projects that are expected to be sold within one year. The average interest rate on these borrowings was 2.22% and 4.59% per annum for the years ended December 31, 2017 and 2018, respectively

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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

## 12. BORROWINGS (Continued)

c)

*Long-term*

The Company's long-term borrowings consist of the following:

	At December 31, 2017	At December 31, 2018
	\$	\$
Bank borrowings		
Unsecured long-term bank borrowings	87,852	97,237
Long-term bank borrowings secured by project assets and solar power systems	24,640	161,628
Long-term bank borrowings secured by property, plant and equipment	83,329	32,863
Long-term bank borrowings secured by equity	150,000	
Long-term bank borrowings secured by restricted cash		12,483
Long-term bank borrowings secured by accounts receivable		8,361
Long-term borrowings secured by inventory	8,164	5,010
	353,985	317,582
Borrowings from non-banking institutions		
Long-term borrowings secured by project assets and solar power systems		65,623
Unsecured long-term borrowings	50,356	10,409
	50,356	76,032
Total	404,341	393,614

The average interest rate on long-term borrowings was 3.06% and 2.5% per annum for the years ended December 31, 2017 and 2018, respectively.

Future principal repayments on the long-term borrowings are as follows:

2019	436,821
2020	62,255
2021	120,477
2022	48,444
2023	5,970
Thereafter	156,468
Total	830,435
Less: future principal repayment related to long-term borrowings, current portion	(436,821)

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Total long-term portion	\$ 393,614
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**CANADIAN SOLAR INC.**

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

**FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018**

**(In Thousands of U.S. Dollars, unless otherwise indicated)**

**12. BORROWINGS (Continued)**

On January 31, 2018, Canadian Solar Japan K.K. entered into a financing agreement with Mizuho Bank, Ltd, denominated in JPY, which agreed to provide revolving long-term working capital financing of approximately \$8,361. The total outstanding borrowings under this agreement equaled \$8,361 at December 31, 2018. The loan is secured by inventory and accounts receivable. The agreement does not contain any financial covenants or restrictions.

On March 26, 2018, Canadian Solar Projects K.K. entered into a financing agreement, denominated in JPY, with a Japanese financial institution, which agreed to provide revolving long-term working capital financing of \$2,726 for Solar power project development in Japan. The outstanding borrowing under this agreement was \$2,726 at December 31, 2018, which requires repayment in 2021. The loan is unsecured and guaranteed by CSI. The agreement does not contain any financial covenants or restrictions.

On March 30, 2018, Lohas ECE 2 G.K., the Company's consolidated VIEs, entered into a financing agreement, denominated in JPY, with a local Japanese bank, which agreed to provide long-term project financing of \$155,943 for solar power project development in Japan. The outstanding borrowing under this agreement was \$78,249 at December 31, 2018, which requires repayment in 2037. The loan is secured by project assets. As of December 31, 2018, the Company met all the requirements of financial covenants.

On April 5, 2018, Belgaum Renewable Energy Private Limited, the Company's 100% owned subsidiary, entered into a financing agreement, denominated in INR, with a local Indian bank, which agreed to provide long-term project financing of \$14,920 for solar power project development in India. The outstanding borrowing under this agreement was \$12,469 at December 31, 2018, which requires repayment in 2030. The loan is secured by project assets and guaranteed by CSI. As of December 31, 2018, the Company met all the requirements of financial covenants.

On May 7, 2018, NC102 Project LLC, the Company's 100% owned subsidiary, entered into a financing agreement, denominated in USD, with Prudential Insurance, which agreed to provide long-term project financing of \$55,505 for Solar power project development in North Carolina. The outstanding borrowing under this agreement was \$47,250 at December 31, 2018, which requires quarterly repayment and mature in 2033. The loan is secured by project assets. The agreement does not contain any financial covenants or restrictions.

On September 14, 2018, Recurrent Energy México Development, S. de R.L. de C.V, the Company's 100% owned subsidiary, entered into a financing agreement, denominated in MXN, with Bank of Banco Nacional de Comercio Exterior, which agreed to provide long-term project financing of \$10,450 for Solar power project development in Mexico. The outstanding borrowing under this agreement was \$8,762 at December 31, 2018, which requires repayment in 2023. The loan is secured by project assets and guaranteed by CSI. The agreement does not contain any financial covenants or restrictions.

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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

**12. BORROWINGS (Continued)**

On October 31, 2018, Canadian Solar Projects K.K. entered into a financing agreement, denominated in JPY, with a Japanese financial institution, which agreed to provide revolving long-term working capital financing of \$4,544 for Solar power project development in Japan. The outstanding borrowing under this agreement was \$4,544 at December 31, 2018, which requires repayment in 2019. The loan is unsecured and guaranteed by CSI. The agreement does not contain any financial covenants or restrictions.

The long-term borrowings disclosed above bear floating interest rates from 1.05% to 6.31% per annum.

c)

*Interest expense*

The Company capitalized interest costs incurred on borrowings obtained to finance construction of solar power projects or property, plant and equipment until the asset is ready for its intended use. The interests incurred during the years ended December 31, 2016, 2017 and 2018 are as follows:

	Years Ended December 31		
	2016	2017	2018
	\$	\$	\$
Interest capitalized project assets	47,881	13,274	15,462
Interest capitalized solar power systems	3,113		
Interest capitalized property, plant and equipment	819	1,010	1,182
Interest expense	69,723	117,971	106,032
<b>Total interest incurred</b>	<b>121,536</b>	<b>132,255</b>	<b>122,676</b>

**13. SHORT-TERM NOTES PAYABLE**

The Company enters into arrangements with banks whereby the banks issue notes to the Company's vendors, which effectively serve to extend the payment date of the associated accounts payable. Vendors may present the notes for payment to a bank, including the bank issuing the note, prior to the stated maturity date, but generally at a discount from the face amount of the note. The Company is generally required to deposit restricted cash balances with the issuing bank, which are utilized to immediately repay the bank upon the banks' settlement of the notes. Given the purpose of these arrangements is to extend the payment dates of accounts payable, the Company has recorded such amounts as short-term notes payable. As payments by the bank are immediately repaid by the Company's restricted cash balances and other deposits with the same bank, the notes payable do not represent cash borrowings from the bank. As of December 31, 2017 and 2018, short-term notes payable was \$572,631 and \$369,722, respectively.

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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

**14. ACCRUED WARRANTY COSTS**

The Company's warranty activity is summarized below:

	Years Ended December 31,		
	2016	2017	2018
	\$	\$	\$
Beginning balance	65,193	61,139	55,659
Warranty provision	9,817	19,793	13,188
Warranty costs incurred	(13,663)	(26,552)	(16,732)
Foreign exchange effect	(208)	1,279	(1,510)
Ending balance	61,139	55,659	50,605

**15. RESTRICTED NET ASSETS**

As stipulated by the relevant laws and regulations applicable to China's foreign investment enterprise, the Company's PRC subsidiaries are required to make appropriations from net income as determined under accounting principles generally accepted in the PRC ("PRC GAAP") to non-distributable reserves, which include general reserve, enterprise expansion reserve and staff welfare and bonus reserve. The wholly-owned PRC subsidiaries are not required to make appropriations to the enterprise expansion reserve but appropriations to the general reserve are required to be made at not less than 10% of the profit after tax as determined under PRC GAAP. The board of directors determines the staff welfare and bonus reserve.

The general reserve is used to offset future losses. The PRC subsidiaries may, upon a resolution passed by the stockholder, convert the general reserve into capital. The staff welfare and bonus reserve is used for the collective welfare of the employee of the subsidiaries. The enterprise expansion reserve is for the expansion of the PRC subsidiaries' operations and can be converted to capital subject to approval by the relevant authorities. These reserves represent appropriations of the retained earnings determined in accordance with Chinese law.

In addition to the general reserve, the Company's PRC subsidiaries are required to obtain approval from the local PRC government prior to distributing any registered share capital. Accordingly, both the appropriations to general reserve and the registered share capital of the Company's PRC subsidiaries are considered as restricted net assets amounting to \$486.6 million as of December 31, 2018.

**16. CONVERTIBLE NOTES**

On February 18, 2014, the Company issued \$130,000 of convertible notes (the "2014 Notes"). The Company granted the initial purchasers a 30-day option to purchase up to an additional \$20,000 aggregate principal amount of the 2014 Notes. The option was fully exercised by initial purchasers on the same day. The key terms of the 2014 Notes are described as follows:

*Maturity date.* The 2014 Notes mature on February 15, 2019.

CANADIAN SOLAR INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

**16. CONVERTIBLE NOTES (Continued)**

*Interest.* The 2014 Notes holders are entitled to receive interest at 4.25% per annum on the principal outstanding, in semi-annually installments, payable in arrears on February 15 and August 15 of each year, beginning August 15, 2014.

*Conversion.* The initial conversion rate is 22.2222 shares per \$1,000 initial principal amount, which represents an initial conversion price of approximately \$45.00 per share. The 2014 Notes are convertible at any time prior to maturity. The conversion rate is subject to change for certain anti-dilution events and upon a change in control. If the holders elect to convert the 2014 Notes upon a change of control, the conversion rate will increase by a number of additional shares as determined by reference to an adjustment schedule based on the date on which the change in control becomes effective and the price paid per common share in the transaction (referred to as the "Fundamental Change Make-Whole Premium"). The Fundamental Make-Whole Premium is intended to compensate holders for the loss of time value upon early exercise.

*Redemption.* The Company may redeem for cash all or any portion of the notes (i) at the Company's option, on or after February 21, 2017, if the last reported sale price of the Company's common stock has been at least 130% of the conversion price then in effect for at least 20 trading days (whether or not consecutive) during any 30 consecutive trading day period (including the last trading day of such period) ending on, and including, the trading day immediately preceding the date on which the Company provides notice of redemption, or (ii) following the occurrence of certain tax related events, in each case, at a redemption price equals to 100% of the principal amount of the notes to be redeemed, plus accrued and unpaid interest to, but excluding, the redemption date.

As of December 31, 2017 and 2018, the carrying value of the convertible notes was \$126,476 and \$127,428, respectively. The balance at December 31, 2017 and 2018 was net of unamortized issuance costs of \$1,024 and \$72, respectively. The debt issuance costs are being amortized through interest expense over the period from February 18, 2014, the date of issuance, to February 15, 2019, the date of expiration, using the effective interest rate method which was 4.96% for the year ended December 31, 2018. The amortization expense was \$898, \$907 and \$953 for the years ended December 31, 2016, 2017 and 2018, respectively. Coupon interest of \$5,419 and \$5,419 was recorded for the years ended December 31, 2017 and 2018, of which, \$2,008 and \$2,008 was not paid and recorded in other payables on the consolidated balance sheets, respectively.

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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

## 17. INCOME TAXES

The provision for income taxes is comprised of the following:

	Years Ended December 31,		
	2016	2017	2018
	\$	\$	\$
Income before income taxes			
Canada	57,922	(30,524)	10,570
United States	(74,002)	(33,205)	61,377
PRC including Hong Kong	152,588	173,266	178,050
Japan	7,981	28,164	27,555
United Kingdom	(25,781)	403	29,977
Other	(35,457)	5,830	(3,129)
	83,251	143,934	304,400
Current tax			
Canada	610	346	(1,846)
United States	96,172	(54,482)	(14,786)
PRC including Hong Kong	29,181	(7,383)	27,285
Japan	3,381	31,266	5,325
United Kingdom	(206)		696
Other	(9,263)	(8,008)	1,701
	119,875	(38,261)	18,375
Deferred tax			
Canada	6,366	(6,464)	12,117
United States	(74,562)	67,426	32,696
PRC including Hong Kong	(31,731)	23,452	2,653
Japan	361	(4,499)	(3,381)
United Kingdom		(353)	915
Other	(2,333)	(350)	(1,406)
	(101,899)	79,212	43,594
Total income tax expense			
Canada	6,976	(6,118)	10,271
United States	21,610	12,944	17,910



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PRC including Hong Kong	(2,550)	16,069	29,938
Japan	3,742	26,767	1,944
United Kingdom	(206)	(353)	1,611
Other	(11,596)	(8,358)	295
	17,976	40,951	61,969

The Company mainly operates in Canada, PRC, Japan, Germany, the United States, United Kingdom, Hong Kong, Thailand and Vietnam.

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**CANADIAN SOLAR INC.**

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

**FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018**

**(In Thousands of U.S. Dollars, unless otherwise indicated)**

**17. INCOME TAXES (Continued)**

**Canada**

The Company was incorporated in Ontario, Canada and is subject to both federal and Ontario provincial corporate income taxes at a rate of 26.5% for the years ended December 31, 2016, 2017 and 2018.

Canadian Solar Solutions Inc. was incorporated in Ontario, Canada and is subject to both federal and Ontario provincial corporate income taxes at a rate of 25% for all years ended December 31, 2016, 2017 and 2018.

**United States**

Canadian Solar (USA) Inc. was incorporated in Delaware, USA and is subject to federal, California, and other states' corporate income taxes at a rate of 37.69%, 38.61% and 24.82% for the years ended December 31, 2016, 2017 and 2018, respectively.

Canadian Solar Energy Acquisition Co. was incorporated in Delaware, USA on January 22, 2015 and is subject to federal, California, and other states' corporate income taxes at a rate of 43.63%, 38.32% and 25.32% for the years ended December 31, 2016, 2017 and 2018, respectively.

**Japan**

Canadian Solar Japan K.K. was incorporated in Japan and is subject to Japanese corporate income taxes at a normal statutory rate of approximately 35.15%, 32.02% and 32.02% for the years ended December 31, 2016, 2017 and 2018, respectively.

**Germany**

Canadian Solar EMEA GmbH was incorporated in Munich, Germany and is subject to German corporate income tax at a rate of approximately 33% for the years ended December 31, 2016, 2017 and 2018, respectively.

**Vietnam**

Canadian Solar Manufacturing Vietnam Co., Ltd was incorporated in Vietnam in June 25, 2015 and is subject to Vietnamese corporate income taxes at a normal statutory rate of 10%. The Company enjoyed tax exemption from 2016 as its first profitable year. For 2018, it continued to enjoy the tax exemption. The exemption will expire in year 2019. The Company will use a reduced statutory rate of 5% from 2020 to 2028.

**Thailand**

Canadian Solar Manufacturing (Thailand) Co., Ltd. was incorporated in Thailand in November 20, 2015 and is subject to Thailand corporate income taxes at a normal statutory rate of 20%. The Company currently has two Board of Investment certificates for tax exemption which have different

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**CANADIAN SOLAR INC.**

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

**FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018**

**(In Thousands of U.S. Dollars, unless otherwise indicated)**

**17. INCOME TAXES (Continued)**

effective years. The licenses both started from year 2017, one of which will expire in year 2022 and the other in year 2025.

**United Kingdom**

Canadian Solar UK Projects Ltd was incorporated in London, UK in August 2014 and is subject to United Kingdom corporate income taxes at a normal statutory rate of 19% for the year ended December 31, 2018 and 2017 and 20% for December 31, 2016.

**Hong Kong**

Canadian Solar International Ltd. was incorporated in Hong Kong, China, and is subject to Hong Kong profits tax at a rate of 16.5% for the years ended December 31, 2016, 2017 and 2018, respectively.

**PRC**

The other major operating subsidiaries, including CSI Solartronics (Changshu) Co., Ltd., CSI Solar Technologies Inc., CSI Cells Co., Ltd., Canadian Solar Manufacturing (Luoyang) Inc., CSI Solar Power Group Co., Ltd. (formerly "CSI Solar Power (China) Inc.") and Canadian Solar Manufacturing (Changshu) Inc., and Suzhou SanySolar Materials Technology Co., Ltd. were governed by the PRC Enterprise Income Tax Law ("EIT Law").

CSI Solartronics (Changshu) Co., Ltd., CSI Solar Technologies Inc., Canadian Solar Manufacturing (Luoyang) Inc., CSI Solar Power Group Co., Ltd. (formerly "CSI Solar Power (China) Inc.") are all subject to the enterprise income tax rate of 25% for the years ended December 31, 2016, 2017 and 2018.

Suzhou SanySolar Materials Technology Co., Ltd. and Suzhou Gaochuangte New Energy Development Co., Ltd. are subject to the enterprise income tax rate of 15% resulting from its High and New Technology Enterprise status for the years ended December 31, 2016, 2017 and 2018 and Canadian Solar Manufacturing (Changshu) Inc. Changshu Tlian Co., LTD for the year ended December 31, 2017 and 2018. CSI Cells Co., Ltd renewed and Changshu Tegu New Material Technology Co., Ltd. received the HNTE status in 2018.

The Company makes an assessment of the level of authority for each of its uncertain tax positions (including the potential application of interest and penalties) based on their technical merits, and has measured the unrecognized benefits associated with such tax positions. This liability is recorded as liability for uncertain tax positions in the consolidated balance sheets. In accordance with its policies, the Company accrues and classifies interest and penalties associated with such unrecognized tax benefits as a component of its income tax provision. The amount of interest and penalties accrued as of December 31, 2017 and 2018 was \$3,083 and \$4,398, respectively. The Company does not anticipate any significant changes to its liability for unrecognized tax positions within the next 12 months.

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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

## 17. INCOME TAXES (Continued)

The following table illustrates the movement and balance of the Company's liability for uncertain tax positions (excluding interest and penalties) for the years ended December 31, 2016, 2017 and 2018, respectively.

	Years Ended December 31,		
	2016	2017	2018
	\$	\$	\$
Beginning balance	9,490	5,684	6,181
Addition for tax positions related to the current year	1,376	1,376	9,806
Reductions for tax positions from prior years/Statute of limitations expirations	(5,436)	(1,094)	
Foreign exchange effect	254	215	(257)
Ending balance	5,684	6,181	15,730

The Company is subject to taxation in various jurisdictions where it operates, mainly including Canada, China and the United States. Generally, the Company's taxation years from 2013 to 2018 are open for reassessment to the Canadian tax authorities. The Company is subject to taxation in the United States and various state jurisdictions. The Company is not currently under examination by the federal or state tax authorities. The Company's income tax returns for 2014 through 2018 remain open to examination by the US tax authorities.

According to the PRC Tax Administration and Collection Law, the statute of limitations is three years if the underpayment of income taxes has resulted from the computational errors of the taxpayer. The statute of limitations could be extended to five years under special circumstances. For income tax adjustments relating to transfer pricing matters, the statute of limitations is ten years. Therefore, the Company's Chinese subsidiaries might be subject to reexamination by the Chinese tax authorities on non-transfer pricing matters for taxation years up to 2013 retrospectively, and on transfer pricing matters for taxation years up to 2008 retrospectively. There is no statute of limitations in case of tax evasion in China.

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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

## 17. INCOME TAXES (Continued)

The components of the deferred tax assets and liabilities are presented as follows:

	At December 31, 2017 \$	At December 31, 2018 \$
Deferred tax assets:		
Accrued warranty costs	17,945	9,424
Bad debt allowance	7,288	7,019
Investment in affiliates under tax equity transactions	24,859	
Inventory write-down	3,283	1,723
Future deductible expenses	17,652	26,973
Depreciation and impairment difference of property, plant and equipment and solar power systems	13,333	19,647
Accrued liabilities related to countervailing and antidumping duty deposits	59,983	9,341
Deferred tax assets relating to sales of solar power systems	2,721	481
Net operating losses carry-forward	52,007	90,536
Unrealized foreign exchange loss and capital loss	3,888	9,471
Interest limitation		13,520
Others	17,912	13,947
Total deferred tax assets, gross	220,871	202,082
Valuation allowance	(65,399)	(76,522)
Total deferred tax assets, net of valuation allowance	155,472	125,560
Deferred tax liabilities:		
Derivative assets	2,742	2,697
Depreciation difference of property, plant and equipment	243	1,212
Deferred profit of projects		4,108
Insurance recoverable	21,420	14,838
Others	4,833	17,316
Total deferred tax liabilities	29,238	40,171
Net deferred tax assets	126,234	85,389
Analysis as:		
Non-current deferred tax assets	131,796	121,087

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Non-current deferred tax liabilities	(5,562)	(35,698)
Net deferred tax assets	126,234	85,389

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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

## 17. INCOME TAXES (Continued)

Movement of the valuation allowance is as follows:

	Years Ended December 31,		
	2016	2017	2018
	\$	\$	\$
Beginning balance	55,959	71,469	65,399
Additions (Reversals)	14,486	(5,361)	11,051
Foreign exchange effect	1,024	(709)	72
Ending balance	71,469	65,399	76,522

As of December 31, 2018, the Company has accumulated net operating losses of \$541,928, of which \$144,586 will expire between 2019 and 2038, and the remaining can be carried forward indefinitely.

The Company considers positive and negative evidences to determine whether some portion or all of the deferred tax assets will not be realized. This assessment considers, among other matters, the nature, frequency and severity of recent losses, forecasts of future profitability, the duration of statutory carry-forward periods, the Company's experience with tax attributes expiring unused and tax planning alternatives. The Company has considered the following possible sources of taxable income when assessing the realization of deferred tax assets:

Tax planning strategies;

Future reversals of existing taxable temporary differences;

Further taxable income exclusive of reversing temporary differences and carry-forwards;

The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income during the periods in which those temporary differences become deductible for tax purposes. As a result, the Company has recognized a valuation allowance of \$65,399 and \$76,522 as at December 31, 2017 and 2018, respectively.

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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

## 17. INCOME TAXES (Continued)

Reconciliation between the provision for income tax computed by applying Canadian federal and provincial statutory tax rates to income before income taxes and the actual provision and benefit for income taxes is as follows:

	Years Ended December 31,		
	2016	2017	2018
Combined federal and provincial income tax rate	27%	27%	27%
Effect of permanent difference	(16)%	(18)%	(11)%
Effect of different tax rate on earnings in other jurisdictions	(18)%	(7)%	%
Effect of tax holiday	(4)%	(2)%	(1)%
Unrecognized tax provision	4%	%	4%
Change in valuation allowance	32%	(6)%	7%
Effect of change in tax rate	%	39%	(3)%
Others	(3)%	(5)%	(3)%
	22%	28%	20%

In accordance with the EIT Law, dividends, which arise from profits of foreign invested enterprises in PRC earned after January 1, 2008, are subject to a 10% withholding income tax. Under applicable accounting principles, a deferred tax liability should be recorded for taxable temporary difference attributable to excess of financial reporting basis over tax basis in the investment in a foreign subsidiary. However, a deferred tax liability is not recognized if the basis difference is not expected to reverse in the foreseeable future and is expected to be permanent in duration. As of December 31, 2018, all of the undistributed earnings of approximately \$583.3 million attributable to the Company's PRC subsidiaries and affiliates are considered to be permanently reinvested, and no provision for PRC withholding income tax on dividend has been made thereon accordingly. Upon distribution of those earnings generated after January 1, 2008, in the form of dividends or otherwise, the Company would be subject to the then applicable PRC tax laws and regulations. Distributions of earnings generated before January 1, 2008 are exempt from PRC dividend withholding tax. The amounts of unrecognized deferred tax liabilities for these earnings are in the range of \$29.2 million to \$58.3 million, as the withholding tax rate of the profit distribution will be 5% or 10% depends on whether the immediate offshore companies can enjoy the preferential withholding tax rate of 5%.

On December 22, 2017, the U.S. president signed into law H.R.1, originally known as the "Tax Cuts and Jobs Act." The Act includes substantial changes to taxation of businesses with one of the most important being the top tax rate reduction from 35% to 21% and presents significant potential impacts on financial statements including the reassessment of the value of deferred taxes and taxes on mandatory repatriation. Per ASC 740, companies are required to recognize the effect of tax law changes in the period of enactment. Therefore, the Company has reflected the impacts of the tax law changes on the current provision. Effective for tax years beginning after December 31, 2017, the corporation tax rate is permanently reduced to 21%. The federal rate change resulted in a net overall deferred tax asset reduction and result in additional tax expense.



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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

## 17. INCOME TAXES (Continued)

The aggregate amount and per share effect of tax holiday are as follows:

	Years Ended December 31,		
	2016	2017	2018
	(In Thousands of US Dollars, except per share data)		
The aggregate amount	3,343	2,850	3,089
Per share basic	0.06	0.05	0.05
Per share diluted	0.06	0.05	0.05

## 18. EARNINGS PER SHARE

The following table sets forth the computation of basic and diluted earnings per share for the years indicated:

	Years Ended December 31,		
	2016	2017	2018
	(In Thousands of US Dollars, except share and per share data)		
Numerator:			
Net income attributable to Canadian Solar Inc. basic	\$ 65,249	\$ 99,572	\$ 237,070
Dilutive effect of interest expense of convertible notes		4,649	4,683
Net income attributable to Canadian Solar Inc. diluted	\$ 65,249	\$ 104,221	\$ 241,753
Denominator:			
Denominator for basic calculation weighted average number of common shares basic	57,524,349	58,167,004	58,914,540
Diluted effects of share number from share options and RSUs	534,714	547,821	543,797
Dilutive effects of share number from convertible notes		2,833,333	2,833,333
Denominator for diluted calculation weighted average number of common shares diluted	58,059,063	61,548,158	62,291,670
Basic earnings per share	\$ 1.13	\$ 1.71	\$ 4.02
Diluted earnings per share	\$ 1.12	\$ 1.69	\$ 3.88



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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

**18. EARNINGS PER SHARE (Continued)**

The following table sets forth anti-dilutive shares excluded from the computation of diluted earnings per share for the years indicated.

	Years Ended December 31,		
	2016	2017	2018
Share options and RSUs	476,043	372,743	276,618

**19. RELATED PARTY BALANCES AND TRANSACTIONS***Related party balances:*

The amount due from related parties of \$16,740 as of December 31, 2018 consists of (i) trade receivable of \$13,844 for development services provided to Roserock, the Company's 49% owned affiliate, (ii) cash funding of \$1,872 to Pilipinas Newton Energy Corp, the Company's 40% owned affiliate, (iii) \$940 guarantee deposit for capital lease to Suzhou Financial Leasing Co., Ltd., the Company's 6% owned affiliate, and (iv) \$84 receivable for solar power products sold to ET Solutions South Africa 1 Pty, the Company's 49% owned affiliate. No amount was due as of December 31, 2018.

The amount due to related parties of \$17,415 as of December 31, 2018 consists of (i) a trade payable of \$11,753 due to Suzhou iSilver Materials Co., Ltd., the Company's 15% owned affiliate, for raw materials purchased, (ii) payable for capital lease of \$1,536 to Suzhou Financial Leasing Co., Ltd., the Company's 6% owned affiliate, (iii) payable for equipment purchase of \$4,053 million to Suzhou Kzone Equipment Technology Co., Ltd, the Company's 32% owned affiliate obtained in September 2017, and (iv) a government award of \$73 to Dr. Shawn Qu, Chairman, President and Chief Executive Officer, which was initially paid to the Company.

*Related party transactions:***Guarantees and loans**

Dr. Shawn Qu, fully guaranteed one-year loan facilities from Chinese commercial banks of RMB896 million (\$129 million), RMB1,346 million (\$206 million) and RMB730 million (\$106 million) in 2016, 2017 and 2018, respectively. Amounts drawn down under the facilities as at December 31, 2016, 2017 and 2018 were \$79,558, \$135,225 and \$65,244, respectively.

Dr. Shawn Qu, fully guaranteed two-year loan facilities from a Chinese commercial bank of RMB540 million (\$79 million) in 2018. Amounts drawn down from the facilities as at December 31, 2018 was \$20,731

The Company granted 121,951, 77,289 and 83,805 restricted share units to Dr. Shawn Qu in 2016, 2017 and 2018, respectively, on account of his having guaranteed these loan facilities.

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CANADIAN SOLAR INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

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19. RELATED PARTY BALANCES AND TRANSACTIONS (Continued)

Sales and purchase contracts with affiliates

In 2018, the Company sold 5 solar power projects to CSIF, the Company's 14.66% owned affiliate in Japan, in the amount of JPY12,276,404 (\$109,597) recorded in revenue, and JPY89,238 (\$836) recorded in other operating income, respectively.

In 2017, The Company sold 13 solar power projects to CSIF, the Company's 14.66% owned affiliate in Japan, in the amount of JPY18,426,754 (\$163,155) recorded in revenue and JPY3,148,648 (\$27,879) recorded in other operating income, respectively.

In 2017 and 2018, the Company provided asset management service to CSIF in the amount of JPY303,772 (\$2,699) and JPY247,341(\$2,210), respectively.

In 2017 and 2018, the Company provided O&M service to CSIF in the amount of JPY32,119 (\$285) and JPY122,529 (\$1,105), respectively.

In 2018, the Company sold solar power products to ET Solutions South Africa 1 Pty, the Company's 49% owned affiliate in South Africa in the amount of RMB45,407 (\$6,859).

In 2017, the Company sold solar power products to Gaochuangte in the amount of RMB11,352 (\$1,648), before Gaochuangte became the Company's 80% owned subsidiary.

In 2016, the Company sold solar power products to Roserock and Garland in the amount of \$247,743, provided development services to Tranquillity, Garland and Roserock in the amount of \$48,711.

In 2016, 2017 and 2018, the Company purchased raw materials from Suzhou iSilver Materials Co., Ltd, the Company's 14.63% owned affiliate in China, in the amount of RMB53,271 (\$8,030), RMB331,958 (\$49,113) and RMB512,154 (\$74,490), respectively.

In 2017 and 2018, the Company purchased equipment from Suzhou Kzone Equipment Technology Co., Ltd, the Company's 32% owned affiliate in China, in the amount of RMB29,704 (\$4,395) and RMB41,635 (\$6,056), respectively.

In 2016 and 2017, the Company incurred costs of RMB54,891 (\$8,274) and RMB44,271 (\$6,430), to Gaochuangte for EPC services related to the Company's solar power projects, respectively. These amounts were recorded in project assets.

20. COMMITMENTS AND CONTINGENCIES

a) *Lease commitments*

The Company has operating lease agreements principally for its office properties in the PRC, Canada, Japan and the United States. Such leases have remaining terms ranging from one to 402 months and are renewable upon negotiation. Rental expenses were \$17,116, \$19,765 and \$20,905 for the years ended December 31, 2016, 2017 and 2018, respectively.

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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

**20. COMMITMENTS AND CONTINGENCIES (Continued)**

Future minimum lease payments under non-cancelable operating lease agreements at December 31, 2018 were as follows:

Year Ending December 31:	\$
2019	18,287
2020	11,790
2021	9,379
2022	2,485
2023	838
Thereafter	7,743
<b>Total</b>	<b>50,522</b>

**b) Capital commitments**

As of December 31, 2018, the commitments for the purchase of property, plant and equipment were \$112,298.

**c) Supply purchase commitments**

In order to secure future solar wafers supply, the Company has entered into long-term supply agreements with suppliers in the past several years. Under such agreements, the suppliers agreed to provide the Company with specified quantities of solar wafers, and the Company has made prepayments to the suppliers in accordance with the supply contracts.

The following is a schedule, by year, of future minimum obligation, using market prices, under all supply agreements as of December 31, 2018:

Year Ending December 31:	\$
2019	462,898

**d) Contingencies**Deutsche Solar AG

In 2007, the Company entered into a twelve-year wafer supply agreement with Deutsche Solar AG, under which the Company was required to purchase a contracted minimum volume of wafers at pre-determined fixed prices and in accordance with a pre-determined schedule, commencing January 1, 2009. The fixed prices may be adjusted annually at the beginning of each calendar year by Deutsche Solar AG to reflect certain changes in their material costs. The agreement also contains a take-or-pay provision, which requires the Company to pay the contracted amount regardless of whether the Company acquires the contracted annual minimum volumes. In 2009, the Company did not meet the minimum volume requirements under the agreement. Deutsche Solar AG agreed that the Company could fulfill its fiscal 2009 purchase obligation in fiscal 2010. In 2010, the Company fulfilled its 2009



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CANADIAN SOLAR INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

**20. COMMITMENTS AND CONTINGENCIES (Continued)**

purchase commitment under the agreement but did not meet the minimum purchase obligation for 2010. In 2011, the Company did not meet its purchase commitment for the respective years. The Company believes that the take-or-pay provisions of the agreement are void under German law and, accordingly, as of December 31, 2010 had not accrued for the full \$21,144 that would otherwise be due under the take-or-pay provision of the agreement. Rather, the Company assumed that it would be permitted to purchase its 2010 contracted quantity, in addition to its 2011 contracted quantity, in fiscal 2011 and had included the purchase obligation for both years in its evaluation of the loss on the long-term purchase commitments. The Company did not record a loss on firm purchase commitments in any of the three years ended December 31, 2018.

In December 2011, Deutsche Solar AG gave notice to the Company to terminate the twelve-year wafer supply agreement with immediate effect. Deutsche Solar AG justified the termination with alleged breach of the agreement by the Company. In the notice, Deutsche Solar AG also reserved its right to claim damage of Euro 148.6 million in court. The agreement was terminated in 2011. As a result, the Company reclassified the accrued loss on firm purchase commitments reserve of \$27,862 as of December 31, 2011 to loss contingency accruals. In addition, the Company made a full bad debt allowance of \$17,409 against the balance of its advance payments to Deutsche Solar as a result of the termination of the long-term supply contract. As of December 31, 2018, the accrued amount of \$24,592 represents the Company's best estimate for its loss contingency. Deutsche Solar did not specify the basis for its claimed damage of Euro 148.6 million in the notice.

LDK

In 2007, the Company entered into a three-year agreement with Jiangxi LDK Solar Hi-Tech Co., Ltd., or LDK, under which the Company purchased specified quantities of silicon wafers and LDK converted the Company's reclaimed silicon feedstock into wafers. In June 2008, the Company entered into two long-term supply purchase agreements with LDK in which the Company was required to purchase a contracted minimum volume of wafers at pre-determined fixed prices and in accordance with a pre-determined schedule. In April 2010, the Company sent a notice to LDK and announced termination of these two contracts.

In July 2010, CSI Cells Co. Ltd., one of the Company's wholly-owned subsidiaries, filed a request for arbitration against LDK with Shanghai International Economy and Trade Arbitration Commission, formerly known as CIETAC Shanghai Branch in relation to wafer supply contracts the Company entered into with LDK in October 2007, or the 2007 Supply Contract and in June 2008, or the 2008 Supply Contracts. In December 2012, CIETAC Shanghai Branch awarded RMB248.9 million in compensation plus RMB2.32 million in arbitration expenses to LDK for the damages LDK claimed to have suffered from the alleged breaches by the Company of the 2007 Supply Contract and 2008 Supply Contracts between July 2009 and September 2010, or the 2012 Arbitral Award.

In February 2013, LDK filed for enforcement of the 2012 Arbitral Award with the Jiangsu Suzhou Intermediate People's Court, or the Suzhou Intermediate Court. In 2013, LDK initiated two separate proceedings against the Company in the Jiangxi Xinyu Intermediate People's Court, or the Xinyu Intermediate Court, claiming that the Company had forfeited its rights to the initial deposits under the

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CANADIAN SOLAR INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

**20. COMMITMENTS AND CONTINGENCIES (Continued)**

2007 Supply Contract and 2008 Supply Contracts because of the alleged breaches under these contracts. On October 18, 2013, the Xinyu Intermediate Court stayed these proceedings pending the decision by the Suzhou Intermediate Court as to the 2012 Arbitral Award.

On September 9, 2015, the Suzhou Intermediate Court ruled in favor of LDK. On October 19, 2015, the Company reached a settlement agreement with LDK, or the 2015 Settlement Agreement. Under the 2015 Settlement Agreement, the Company agreed to pay RMB132.7 million (\$20.8 million translated by using the rate in 2015) to LDK and to purchase 64.3 million pieces of silicon wafers from LDK at market price over a three year period starting in or around December 2015, in exchange for which LDK (i) would release the Company from the 2012 Arbitration Award and waive its rights and claims thereunder and (ii) would withdraw its complaints from the Xinyu Intermediate Court and terminate such proceedings. The Suzhou Intermediate Court reviewed the 2015 Settlement Agreement and terminated the enforcement proceeding relating to the 2012 Arbitral Award.

On May 19, 2016, the Company received a copy of a bill of complaint from the Xinyu Intermediate Court, in which LDK's receiver applied to the court for an order to revoke the 2015 Settlement Agreement pursuant to PRC bankruptcy law, and requested it to pay an amount that had been waived by LDK under the 2015 Settlement Agreement. In May 2017, the Xinyu Intermediate Court made a judgment in favor of LDK's receiver, revoking the 2015 Settlement Agreement and requiring the Company to pay RMB58.5 million to LDK's receiver and bear court expenses at RMB0.8 million. The Company recorded a \$8.6 million provision in the first quarter of 2017 and the Company appealed the judgment. In November 2017, the Jiangxi High People's Court, or the Jiangxi High Court, dismissed the Company's appeal and upheld the original judgment. The Company then appealed this judgment to the Supreme People's Court of The People's Republic of China, or the Supreme Court. In January 2018, the Supreme Court put the Company's appeal on record pending examination, but later dismissed the Company's request for retrial. In March 2018, LDK's receiver applied to the Xinyu Intermediate Court for compulsory execution of its judgment. In April 2018, the Xinyu Intermediate Court deducted RMB59.5 million from the Company's accounts for the execution of its judgment.

Class Action Lawsuits

Following the two subpoenas from the SEC in 2010, six class action lawsuits were filed in the U.S. District Court for the Southern District of New York, or the New York cases, and another class action lawsuit was filed in the U.S. District Court for the Northern District of California, or the California case. The New York cases were consolidated into a single action in December 2010. On January 5, 2011, the California case was dismissed by the plaintiff, who became a member of the lead plaintiff group in the New York action. On March 11, 2011, a Consolidated Complaint was filed with respect to the New York action. The Consolidated Complaint alleges generally that the Company's financial disclosures during 2009 and early 2010 were false or misleading; asserts claims under Sections 10(b) and 20(a) of the Exchange Act and Rule 10b-5 thereunder; and names the Company, its chief executive officer and its former chief financial officer as defendants. The Company filed its motion to dismiss in May 2011, which was taken under submission by the Court in July 2011. On March 30, 2012, the Court dismissed the Consolidated Complaint with leave to amend, and the



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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

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**20. COMMITMENTS AND CONTINGENCIES (Continued)**

plaintiffs filed an Amended Consolidated Complaint against the same defendants on April 19, 2012. On March 29, 2013, the Court dismissed with prejudice a class action lawsuit filed against the Company and certain named defendants alleging that the Company's financial disclosures during 2009 and early 2010 were false or misleading and in violation of federal securities law. The court found that the plaintiffs failed to adequately allege a securities law violation and granted the Company's motion to dismiss all claims against all defendants with prejudice. On December 20, 2013, the United States Court of Appeals for the Second Circuit affirmed the district court's order dismissing such class action lawsuit.

In addition, a similar class action lawsuit was filed against the Company and certain of its executive officers in the Ontario Superior Court of Justice on August 10, 2010. The lawsuit alleges generally that the Company's financial disclosures during 2009 and 2010 were false or misleading and brings claims under the shareholders' relief provisions of the CBCA, Part XX III.1 of the Ontario Securities Act as well as claims based on negligent misrepresentation. In December 2010, the Company filed a motion to dismiss the Ontario action on the basis that the Ontario Court has no jurisdiction over the claims and potential claims advanced by the plaintiff. The court dismissed the Company's motion on August 29, 2011. On March 30, 2012, the Ontario Court of Appeal denied the Company's appeal with regard to its jurisdictional motion. On November 29, 2012, the Supreme Court of Canada denied the Company's application for leave to appeal the order of the Ontario Court of Appeal. The plaintiff's motions for class certification and leave to assert the statutory cause of action under the Ontario Securities Act were served in January 2013 and initially scheduled for argument in the Ontario Superior Court of Justice in June 2013. However, the plaintiff's motions were adjourned in view of the plaintiff's decision to seek an order compelling the Company to file additional evidence on the motions. On July 29, 2013 the Court dismissed the plaintiff's motion to compel evidence. On September 24, 2013 the plaintiff's application for leave to appeal from the July 29 order was dismissed. In September 2014, the plaintiff obtained an order granting him leave to assert the statutory cause of action under the Ontario Securities Act for certain of his misrepresentation claims.

In January 2015, the plaintiff in the class action lawsuit filed against the Company and certain of its executive officers in the Ontario Superior Court of Justice obtained an order for class certification in respect of certain claims for which he had obtained leave in September 2014 to assert the statutory cause of action for misrepresentation under the Ontario Securities Act, for certain negligent misrepresentation claims and for oppression remedy claims advanced under the CBCA. The Court dismissed the Company's application for leave to appeal and the class action is at the merits stage. The common issues trial is scheduled for October 2019. The Company believes the Ontario action is without merit and the Company is defending it vigorously.

Countervailing and antidumping duties

In October 2011, a trade action was filed with the U.S. Department of Commerce, or USDOC, and the U.S. International Trade Commission, or USITC, by the U.S. unit of SolarWorld AG and six other U.S. firms, accusing Chinese producers of crystalline silicon photovoltaic cells, or CSPV cells, whether or not incorporated into modules, of selling their products (i.e., CSPV cells or modules incorporating these cells) into the United States at less than fair value, or dumping, and of receiving

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

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**20. COMMITMENTS AND CONTINGENCIES (Continued)**

countervailable subsidies from the Chinese authorities. These firms asked the U.S. government to impose antidumping and countervailing duties on Chinese-origin CSPV cells. The Company was identified as one of a number of Chinese exporting producers of the subject goods to the U.S. market. The Company also has affiliated U.S. operations that import the subject goods from China.

On October 17, 2012, the United States Department of Commerce, or USDOC, issued final affirmative determinations with respect to its antidumping and countervailing duty investigations on crystalline silicon photovoltaic, or CSPV, cells, whether or not incorporated into modules, from China. On November 30, 2012, the U.S. International Trade Commission, or USITC determined that imports of CSPV cells had caused material injury to the U.S. CSPV industry. The USITC's determination was subsequently affirmed by the U.S. Court of International Trade, or CIT, and the U.S. Court of Appeals for the Federal Circuit, or Federal Circuit.

As a result of these determinations, the Company was required to pay cash deposits on Chinese-origin CSPV cells imported into the U.S., whether or not incorporated into modules the rates applicable to the Company were 13.94% (antidumping duty) and 15.24% (countervailing duty). The Company paid all the cash deposits due under these determinations. Several parties challenged the determinations of the USITC in appeals to the CIT. On August 7, 2015, the CIT sustained the USITC's final determination and on January 22, 2018, the Federal Circuit upheld the CIT's decision. There was no further appeal to the U.S. Supreme Court and, therefore, this decision is final.

The rates at which duties will be assessed and payable are subject to administrative reviews.

The USDOC published the final results of the first administrative reviews in July, 2015. As a result of these decisions, the duty rates applicable to the Company were revised to 9.67% (antidumping duty) and 20.94% (countervailing duty). The assessed rates were appealed to the CIT. The CIT affirmed the USDOC's countervailing duty rates, and no change was made to our countervailing duty rate. This decision by the CIT was not appealed to the Federal Circuit. The CIT likewise affirmed USDOC's antidumping duty rates, and no change was made to our antidumping duty rate. This decision by the CIT was, however, appealed to the Federal Circuit, which upheld the CIT's decision. There was no further appeal to the U.S. Supreme Court and, therefore, this decision is final.

The USDOC published the final results of the second administrative reviews in June 2016 (antidumping duty) and July 2016 (countervailing duty). As a result of these decisions, the antidumping duty rate applicable to the Company was reduced to 8.52% (from 9.67%) and then to 3.96% (from 8.52%). Because the Company was not subject to the second administrative review of the countervailing duty order, its countervailing duty rate remained at 20.94%. The antidumping duty rates were appealed to the CIT. The CIT affirmed the USDOC's second antidumping duty rate. This decision by the CIT was appealed to the Federal Circuit, with a decision expected in late 2019.

The USDOC published the final results of the third administrative reviews in June 2017 (antidumping duty) and July 2017 (countervailing duty), and later amended in October 2017. As result of these decisions, the duty rates applicable to the Company were changed to 13.07% (from 8.52%) (anti-dumping duty) and 18.16% (from 20.94%) (countervailing duty). The assessed rates were appealed to the CIT. The CIT has remanded the countervailing duty appeal to USDOC to consider

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

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**20. COMMITMENTS AND CONTINGENCIES (Continued)**

adjustments to the Company's rate. The CIT will review any adjustments made by the USDOC to the Company's rate and issue a ruling, which is expected later in 2019. A decision on the assessed antidumping rate is expected in mid-2019.

The USDOC published the final results of the fourth administrative reviews in July 2018 (both antidumping duty and countervailing duty, with the countervailing duty rate later amended in October 2018). Because the Company was not subject to the fourth administrative review of the antidumping duty order. The Company's antidumping duty rate remains at 13.07%. Because of these decisions, the countervailing duty rate applicable to the Company was reduced to 11.59% (from 18.16%). The countervailing duty rates were appealed to the CIT. A decision on this appeal is not expected until late 2019 or 2020.

The fifth and sixth of administrative reviews are ongoing and are expected to conclude in mid-2019 and mid-2020, respectively. In the fifth administrative reviews, the USDOC has assessed us at a preliminary antidumping duty rate of 44.25% (up from 13.07%) and a preliminary countervailing duty rate of 16.46% (up from 11.59%). We are vigorously contesting these rates in the final phase of the review.

The final results of the fifth and sixth administrative reviews may result in duty rates that differ from the previous duty rates and cash deposit rates applicable to the Company. These duty rates could materially and adversely affect our U.S. import operations and increase the Company's cost of selling into the U.S.

Between 2017 and 2019, the USDOC and USITC conducted five-year sunset reviews and determined to continue the Solar 1 antidumping and countervailing duty orders. In March 2018, the USDOC published the results of its expedited first sunset reviews and concluded that revocation of the Solar 1 orders would likely lead to a continuation or recurrence of dumping and a countervailable subsidy. The Company did not participate in USDOC's first sunset review. The Company did, however, participate in the USITC's first sunset review and requested that the Solar 1 duties be revoked. The USITC issued an affirmative determination in March 2019 declining to revoke the Solar 1 orders and finding that such revocation would be likely to lead to a continuation or recurrence of material injury to the U.S. industry within a reasonably foreseeable time. As a result, the Solar 1 orders remain in effect. *Solar 2*

On December 31, 2013, SolarWorld Industries America, Inc. filed a new trade action with the USDOC and the USITC accusing Chinese producers of certain CSPV modules of dumping their products into the U.S. and of receiving countervailable subsidies from the Chinese authorities. This trade action also alleged that Taiwanese producers of certain CSPV cells and modules dumped their products into the U.S.. Excluded from these new actions were those Chinese-origin solar products covered by the Solar 1 orders described above. The Company was identified as one of a number of Chinese producers exporting the Solar 2 subject goods to the U.S. market.

"Chinese CSPV products subject to Solar 2 orders" refer to CSPV products manufactured in mainland China using non-Chinese (e.g., Taiwanese) CSPV cells and imported into the U.S. during the investigation or administrative review periods of Solar 2. "Taiwanese CSPV products subject to Solar

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**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

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**20. COMMITMENTS AND CONTINGENCIES (Continued)**

2 orders" refer to CSPV products manufactured outside of mainland China using Taiwanese CSPV cells and imported into the U.S. during the investigation or review periods of Solar 2.

On December 23, 2014, the USDOC issued final affirmative determinations with respect to its antidumping and countervailing duty investigation on these CSPV products. On January 21, 2015, the USITC determined that imports of these CSPV products had caused material injury to the U.S. CSPV industry. As a result of these determinations, the Company is required to pay cash deposits on these CSPV products the rates of which applicable to its Chinese CSPV products were 30.06% (antidumping duty) and 38.43% (countervailing duty). The cash deposit rate applicable to its Taiwanese CSPV products subject to Solar 2 orders varied by solar cell producer. The Company paid all the cash deposits due under these determinations.

The USDOC's determination and the assessed countervailing duty rates were appealed to the CIT and the Federal Circuit. In March 2019, the Federal Circuit affirmed the CIT's decision confirming the USDOC's determination but reduced the Company's countervailing duty rate to 33.58% (from 38.43%). There was no further appeal to the U.S. Supreme Court and, therefore, this decision is final.

The rates at which duties will be assessed and payable are subject to administrative reviews.

The USDOC published the final results of the first administrative reviews in July 2017 (China and Taiwan antidumping duty orders) and September 2017 (China-only countervailing duty order). Because the Company was not subject to the first administrative reviews of the Chinese orders of Solar 2, its duty rates will remain at 30.06% (antidumping duty) and 33.58% (countervailing duty) for its Chinese CSPV products. The Company's duty rates for its Taiwanese CSPV products range from 3.56% to 4.20%.

The second administrative reviews for the Chinese antidumping and countervailing duty orders were rescinded, meaning that there is no change in the Chinese antidumping and countervailing duty rates applicable to the Company's Chinese CSPV products 30.06% (antidumping duty) and 33.58% (countervailing duty). There is no countervailing duty order on Taiwan Solar 2 products. The USDOC published final results of the second administrative review for the Taiwanese antidumping duty order (there is no countervailing duty order) in June 2018. The rate applicable to the Company is 1.33%. There is no ongoing litigation related to the Taiwanese antidumping duty rate.

The Company is not subject to the third administrative reviews of the Chinese orders and, therefore, our duty rates will remain unchanged at 30.06% (antidumping duty) and 33.58% (countervailing duty) for our Chinese CSPV products. There is no countervailing duty order on Taiwan Solar 2 products. The third administrative review of the Taiwanese antidumping order is ongoing and is expected to conclude in mid-2019. The final results for this review could result in set a new cash deposit rate for the Company, which may differ from the Company's current cash deposit rates.

The USDOC is expected to initiate the fourth administrative reviews of the Chinese and Taiwanese orders soon.

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**CANADIAN SOLAR INC.**

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

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**20. COMMITMENTS AND CONTINGENCIES (Continued)**

In 2018, the Company booked the benefits of antidumping duty and countervailing duty provision reversals of \$50.2 million, primarily associated with prior years' module sales based on the respective updated rates of the administrative reviews carried out by the U.S. Department of Commerce.

On May 17, 2017, following receipt of a petition from Suniva, Inc., which was later joined by SolarWorld Americas, Inc., the USITC instituted a safeguard investigation to determine whether there were increased imports of CSPV products in such quantities as to be a substantial cause of serious injury, or the threat thereof, to the domestic industry producing like or directly competitive products. On September 22, 2017, the USITC determined that CSPV products are being imported into the United States in such increased quantities as to be a substantial cause of serious injury to the domestic industry.

On January 23, 2018, the President of the United States imposed a safeguard measure on imports of CSPV cells, whether or not partially or fully assembled into other products such as modules, consisting of (1) a tariff-rate quota for four years on imports of CSPV cells not partially or fully assembled into other products, with (a) an in-quota quantity of 2.5 gigawatts, and (b) a tariff rate applicable to over-quota CSPV cells of 30%, declining annually by five percentage points to 25% in the second year, 20% in the third year, and 15% in the fourth year; and (2) a 30% tariff for four years on CSPV modules, declining annually by five percentage points to 25% in the second year, 20% in the third year, and 15% in the fourth year. This safeguard measure, which became effective on February 7, 2018, applies to CSPV products imported from all countries, except for certain developing country members of the World Trade Organization.

The safeguard measure may be reduced, modified, or eliminated during the mid-term review, which should take place in 2019 and 2020, as required by U.S. law. The USITC must prepare a report for provision to the President and the Congress by no later than February 7, 2020. The USITC report must address the domestic industry's adjustment efforts and progress by workers and firms to adjust to import competition. The President is then required to consider the USITC's views but is not required to take any action. The President has the authority to reduce, modify, or terminate the safeguard measures if the President determines that (1) the effectiveness of the safeguard action has been impaired by changed economic circumstances, or (2) the domestic industry has not made adequate efforts to make a positive adjustment to import competition. Alternatively, if a majority of the domestic industry petitions the President that the domestic industry has made a positive adjustment to import competition, then the President may likewise reduce, modify, or terminate the safeguard measures.

On February 9, 2018, Canadian Solar and two other manufacturers and exporters of CSPV modules from Canada challenged the applicability of the safeguard measure to U.S. imports of CSPV modules from Canada. The Canadian parties applied to the CIT for a temporary restraining order and preliminary injunction (TRO/PI) to halt the imposition of the 30% tariff on CSPV modules imported from Canada. The CIT denied the application in March 2018, and on June 15, 2018, the Federal Circuit affirmed the CIT's decision.

On September 6, 2012, following a complaint lodged by EU ProSun, an ad-hoc industry association of EU CSPV module, cell and wafer manufacturers, the European Commission initiated an antidumping investigation concerning EU imports of CSPV modules and key components (i.e., cells and

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**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

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**20. COMMITMENTS AND CONTINGENCIES (Continued)**

wafers) originating in China. On November 8, 2012, following a complaint lodged by the same parties, the European Commission initiated an anti-subsidy investigation on these same products.

On December 6, 2013, the EU imposed definitive antidumping and countervailing measures on imports of CSPV modules and key components (i.e., cells and wafers) originating in or consigned from China. On March 3, 2017, the European Commission extended the antidumping and countervailing measures for 18 months on imports of CSPV modules and key components (i.e., cells and wafers) originating in or consigned from China. On September 16, 2017, the European Commission amended the form of the antidumping and countervailing measures for certain Chinese exporters (but not for Canadian Solar). On March 9, 2018, the antidumping and countervailing measures expired. As a result, since then, the Company's CSPV modules and cells that originate in, or are consigned from, China, are no longer subject to antidumping or countervailing measures.

On February 28, 2014, the Company filed separate actions with the General Court of the EU for annulment of the regulation imposing the definitive antidumping measures and of the regulation imposing the definitive countervailing measures (case T-162/14 and joined cases T-158/14, T-161/14, and T-163/14). The General Court rejected these actions for annulment. On May 8, 2017, the Company appealed the judgements of the General Court before the Court of Justice of the EU (cases C-236/17 and C-237/17).

On March 27, 2019, the Court of Justice rejected the appeals.

On June 3, 2015, the Canada Border Services Agency released final determinations of dumping and subsidization which found dumping calculated by way of a Ministerial Specification based on a Non Market Economy finding applicable to all cooperative exporters and ascertained a Canadian Solar-specific subsidies rate of RMB0.014 per Watt. On July 3, 2015 the Canadian International Trade Tribunal determined that a Canadian industry was not negatively affected as a result of imported modules but was threatened with negative impact. As a result of these findings, definitive duties were imposed on imports of Chinese solar modules into Canada starting on July 3, 2015. The Company does not believe the imposition of these duties will have a material negative effect upon its results of operations because it has significant module manufacturing capacity in Ontario and do not rely on Chinese solar modules to serve its Canadian business.

**21. SEGMENT INFORMATION**

The Company uses the management approach to determine operating segments. The management approach considers the internal organization and reporting used by the Company's chief operating decision maker ("CODM") for making decisions, allocating resources and assessing performance. The Company's CODM has been identified as the Chief Executive Officer of the Company, since he reviews consolidated and segment results when making decisions about allocating resources and assessing performance of the Company.

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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

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## 21. SEGMENT INFORMATION (Continued)

The Company has been operating in two principal businesses since 2016: module and system solutions ("MSS") and Energy. The MSS business comprises primarily the design, development, manufacture and sale of solar modules, other solar power products and solar system kits. The MSS business also provides engineering, procurement and construction (EPC) and operating and maintenance (O&M) services. The Energy business comprises primarily the development and sale of solar projects, operating solar power projects and the sale of electricity. The module sales from the Company's MSS business to its Energy business are on terms and conditions similar to sales to third parties. The Company's CODM reviews net revenue and gross profit and does not review balance sheet information by segment.

The following table summarizes the Company's revenues, gross profit and income from operations generated from each segment:

	Years Ended December 31, 2018			
	MSS	Energy	Elimination	Total
	\$	\$	\$	\$
Net revenues	2,413,889	1,575,594	(244,971)	3,744,512
Cost of revenues	1,923,131	1,302,779	(256,480)	2,969,430
Gross profit	490,758	272,815	11,509	775,082
Income from operations	141,609	211,539	11,509	364,657

	Years Ended December 31, 2017			
	MSS	Energy	Elimination	Total
	\$	\$	\$	\$
Net revenues	2,850,859	677,470	(137,936)	3,390,393
Cost of revenues	2,390,686	473,453	(111,344)	2,752,795
Gross profit	460,173	204,017	(26,592)	637,598
Income from operations	136,419	159,518	(26,592)	269,345

	Years Ended December 31, 2016			
	MSS	Energy	Elimination	Total
	\$	\$	\$	\$
Net revenues	2,825,270	106,432	(78,624)	2,853,078
Cost of revenues	2,429,207	66,955	(60,272)	2,435,890
Gross profit	396,063	39,477	(18,352)	417,188

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Income from operations	115,579	(4,063)	(18,352)	93,164
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Income from operations is an estimated based on the Company's management accounts as some services are shared by two segments.

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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

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## 21. SEGMENT INFORMATION (Continued)

The following table summarizes the Company's net revenues generated from different geographic locations. The information presented below is based on the location of customers' headquarters:

	Years Ended December 31,		
	2016	2017	2018
	\$	\$	\$
Europe and other regions:			
Germany	132,185	94,066	95,514
Netherlands	36,732	51,357	83,475
United Kingdom	73,274	48,295	101,479
Australia	33,634	48,069	232,409
South Africa	22,398	21,916	53,739
Spain	22,516	13,471	58,811
Czech	1,653	10,822	17,411
Others	88,773	68,144	55,730
	411,165	356,140	698,568
The Americas:			
United States	863,500	628,815	999,144
Brazil	33,002	388,554	339,964
Canada	193,790	52,194	68,385
Others	13,217	38,599	67,164
	1,103,509	1,108,162	1,474,657
Asia:			
PRC	585,296	874,559	620,520
Japan	373,396	476,946	483,041
India	292,234	336,468	145,873
Singapore	7,615	97,483	8,427
U.A.E	5,391	91,991	104,467
Israel	464	302	73,879
Korea	29,212	25,244	46,697
Others	44,796	23,098	88,383
	1,338,404	1,926,091	1,571,287
Total net revenues	2,853,078	3,390,393	3,744,512

The following table summarizes the Company's long-lived assets, including property, plant and equipment, non-current project assets, solar power systems, prepaid land use rights and intangible



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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

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## 21. SEGMENT INFORMATION (Continued)

assets at December 31, 2017 and 2018 by geographic region, based on the physical location of the assets:

	At December 31, 2017	At December 31, 2018
	\$	\$
PRC	675,291	824,618
Japan	99,673	233,155
Australia		61,960
United States	71,761	50,052
Canada	8,827	9,739
Others	193,452	193,179
Total long-lived assets	1,049,004	1,372,703

The following table summarizes the Company's revenues generated from each product or service:

	Years Ended December 31,		
	2016	2017	2018
	\$	\$	\$
MSS:			
Solar modules and other solar power products	2,573,685	2,551,509	1,930,701
Solar system kits	86,794	84,598	93,253
EPC services			62,408
O&M services	4,128	6,938	10,767
Others (materials)	82,039	69,878	71,789
Energy:			
Solar power projects	22,665	632,256	1,542,906
Electricity	68,789	29,236	8,735
Others (EPC and development services)	14,978	15,978	23,953
Total net revenues	2,853,078	3,390,393	3,744,512

## 22. MAJOR CUSTOMERS

Details of customers accounting for 10% or more of total net revenues are as follows:

	Years Ended December 31,		
	2016	2017	2018
	\$	\$	\$
Company A			718,341

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The accounts receivable from three customers with the largest receivable balances represents 12%, 5% and 5% of the balance of the account at December 31, 2018, and 12%, 4% and 4% of the balance

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**CANADIAN SOLAR INC.**

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

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**22. MAJOR CUSTOMERS (Continued)**

of the account at December 31, 2017, respectively. The balance from the customer with the largest receivable balance is \$34,468 and \$59,224 as of December 31, 2017 and 2018, respectively.

**23. EMPLOYEE BENEFIT PLANS**

Employees of the Company located in the PRC are covered by the retirement schemes defined by local practice and regulations, which are essentially defined contribution schemes. The calculation of contributions for eligible employees is based on 20% of the applicable payroll cost in 2016. The expense incurred by the Company to these defined contributions schemes was \$7,186, \$9,412 and \$12,544 for the years ended December 31, 2016, 2017 and 2018, respectively.

In addition, in 2018, the Company is required by PRC law to contribute approximately 10%, 8%, 2% and 2% of applicable salaries for medical insurance benefits, housing funds, unemployment and other statutory benefits, respectively. The PRC government is directly responsible for the payment of the benefits to these employees. The amounts contributed for these benefit schemes were \$9,128, \$10,447 and \$11,211 for the years ended December 31, 2016, 2017 and 2018, respectively.

**24. SHARE-BASED COMPENSATION**

In March 2006, the Company adopted a share incentive plan, or the Plan. The purpose of the Plan is to promote the success and enhance the value of the Company by linking the personal interests of the directors, employees and consultants to those of the shareholders and providing the directors, employees and consultants with an incentive for outstanding performance to generate superior returns to the shareholders. The Plan is also intended to motivate, attract and retain the services of the directors, employees and consultants upon whose judgment, interest and effort the successful conduct of the Company's operations is largely dependent. In September 2010, the shareholders approved an amendment to the Plan to increase the maximum number of common shares which may be issued pursuant to all awards of options, restricted shares and RSUs under the Plan to the sum of (i) 2,330,000 plus (ii) the sum of (a) 1% of the number of outstanding common shares of the Company on the first day of each of 2007, 2008 and 2009 and (b) 2.5% of the number of outstanding common shares of the Company outstanding on the first day of each calendar year after 2009. The Plan will expire on, and no awards may be granted after, May 8, 2021. Under the terms of the Plan, options are generally granted with an exercise price equal to the fair market value of the Company's ordinary shares and expire ten years from the date of grant.

***Options to Employees***

As of December 31, 2018, there was \$nil unrecognized compensation expense related to share-based compensation awards. During the years ended December 31, 2016, 2017 and 2018, \$44, nil and \$nil was recognized as compensation expense, respectively.

The Company utilizes the Binomial option-pricing model to estimate the fair value of stock options. No stock options were granted in 2016, 2017 and 2018.

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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

**24. SHARE-BASED COMPENSATION (Continued)**

The Company used the market yield of Chinese International Government Bonds, denominated in U.S. dollar, with maturities that can cover the contractual life of the shares option for the risk-free rates. In 2013, since the Company has been listed for approximately 7 years and its share price history is more comparable to the life of the issued options, the Company estimated the expected volatility based on the annualized standard deviation of its daily stock price return from the date of listing to the valuation date. The Company's dividend policy is to retain earnings for reinvestment purpose, thus the dividend yield is assumed to be zero. The Company estimated the annual exit rates based on the historical general exit rate of employees at different levels. The Company estimated the exercise multiple based on the historical exercise pattern of prior employee stock options granted by the Company.

A summary of the option activity is as follows:

	Number of Options	Weighted Average Exercise Price	Weighted Average Remaining Contract Terms	Aggregate Intrinsic Value In Thousands of U.S. Dollars
Options outstanding at January 1, 2018	369,173	\$ 15.97	2 years	2,068
Granted				
Exercised	(74,521)	10.33		
Forfeited	(70,150)	41.66		
Options outstanding at December 31, 2018	224,502	9.82	2 years	1,026
Options vested or expected to be vested at December 31, 2018	224,502	9.82		
Options exercisable at December 31, 2018	224,502	9.82		

No option was granted in 2016, 2017 and 2018, respectively. The total intrinsic value of options exercised during the years ended December 31, 2016, 2017 and 2018 was \$2,643, \$605 and \$256, respectively.

**RSUs to Employees**

The Company granted 868,036, 1,033,001 and 759,702 RSUs to employees in 2016, 2017 and 2018, respectively. The RSUs entitle the holders to receive the Company's common shares upon vesting. The RSUs were granted for free and generally vest over periods from one to four years based on the specific terms of the grants. The fair market value of the Company's ordinary shares at the date of grant resulted in total compensation cost of approximately \$12.1 million, \$13.3 million and \$10.2 million that will be recognized ratably over the vesting period for the RSUs granted in 2016, 2017 and 2018, respectively. In the years ended December 31, 2016, 2017 and 2018, the Company recognized \$7,713, \$9,314 and \$10,227 in compensation expense associated with these awards, respectively.



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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

**24. SHARE-BASED COMPENSATION (Continued)**

As of December 31, 2018, there was \$20,452 of total unrecognized share-based compensation related to unvested RSUs, which is expected to be recognized over a weighted-average period of 2.42 years.

A summary of the RSU activity is as follows:

	Number of Shares	Weighted Average Grant-Date Fair Value \$
Unvested at January 1, 2018	1,732,047	15.42
Granted	759,702	13.62
Vested	(609,418)	16.84
Forfeited	(101,060)	15.17
Unvested at December 31, 2018	1,781,271	14.18

The total fair value of RSUs vested during the years ended December 31, 2016, 2017 and 2018 was \$7,271, \$12,091 and \$10,242, respectively.

**25. CAPITAL LEASE**

During 2017, the Company sold certain machinery ("leased assets") to third party financing companies (the "purchaser-lessor") and simultaneously entered into contracts to lease back the leased assets from the purchaser-lessor for periods ranging from two to four years. Pursuant to the terms of the contracts, the Company is required to pay to the purchaser-lessor quarterly lease payments over the terms of the lease and has the option to re-purchase the machinery for a nominal price upon the expiration of the lease. The lease is classified as capital lease. In connection with this sale-leaseback transaction, the Company recognized a loss of approximately \$6.5million, which is being deferred and amortized into expense over the remaining useful lives of the leased assets.

In March 2017, the Company entered into a two-year finance leasing contract with a third-party lessor to lease equipment with carrying amount of \$23.0 million. Pursuant to the terms of the contract, the Company is required to pay to the lessor quarterly lease payment over the lease term and has the option to re-purchase these equipment at a nominal price upon the expiration of the lease. The lease is classified as capital lease.

As of December 31, 2017 and 2018, the net value of the leased assets are:

	At December 31, 2017 \$	At December 31, 2018 \$
Machinery and equipment	131,624	121,938
Accumulated depreciation	(46,727)	(40,455)
Machinery and equipment, net	84,897	81,483

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## CANADIAN SOLAR INC.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

## FOR THE YEARS ENDED DECEMBER 31, 2016, 2017 and 2018

(In Thousands of U.S. Dollars, unless otherwise indicated)

**25. CAPITAL LEASE (Continued)**

The Company also leases machinery from third parties in the PRC under non-cancellable capital leases. As of December 31, 2018, future minimum lease payments for assets under capital leases to be paid over the remaining terms of up to four years were as follows:

Year Ending December 31:	\$
2019	40,945
2020	23,483
2021	11,842
2022 and thereafter	556
Total minimum lease payments	76,826
Less: amount representing interest	5,024
Present value of net minimum lease payments	71,802
Current portion	37,549
Non-current portion	34,253

The current portion of the present value of net minimum lease payments is recorded in other payables, while the non-current portion is recorded in other non-current liabilities.

**26. SUBSEQUENT EVENTS**

In February 2019, the Company repaid the entire \$127.5 million outstanding balance of senior convertible notes.

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**Additional Information Financial Statement Schedule I**

**Canadian Solar Inc.**

Schedule I has been provided pursuant to the requirements of Rule 12-04(a) and 4-08(e)(3) of Regulation S-X, which require condensed financial information as to financial position, changes in financial position and results of operations of a parent company as of the same dates and for the same periods for which audited consolidated financial statements have been presented as the restricted net assets of Canadian Solar Inc.'s consolidated and unconsolidated subsidiaries not available for distribution to Canadian Solar Inc. as of December 31, 2018 of \$486.6 million, exceeded the 25% threshold.

The condensed financial information has been prepared using the same accounting policies as set out in the consolidated financial statements, except that the equity method has been used to account for investments in subsidiaries.

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Table of Contents**FINANCIAL INFORMATION OF PARENT COMPANY****BALANCE SHEETS**

	<b>December 31, 2017</b>	<b>December 31, 2018</b>
	<b>(In Thousands of U.S. Dollars, except share data)</b>	
<b>ASSETS</b>		
Current assets:		
Cash and cash equivalents	16,957	9,097
Accounts receivable trade, net of allowance for doubtful accounts of \$3,642 and \$3,462 as of December 31, 2017 and 2018, respectively	6,207	11,476
Amounts due from related parties	375,843	279,039
Advances to suppliers, net of allowance for doubtful accounts of \$5,222 and \$5,222 as of December 31, 2017 and 2018, respectively	60	
Prepaid expenses and other current assets	11,490	15,222
<b>Total current assets</b>	<b>410,557</b>	<b>314,834</b>
Investment in subsidiaries	1,005,176	1,154,004
Deferred tax assets	9,185	28,208
Other non-current assets	67,940	68,068
<b>TOTAL ASSETS</b>	<b>1,492,858</b>	<b>1,565,114</b>
<b>LIABILITIES AND EQUITY</b>		
Current liabilities:		
Short-term borrowings	151,000	
Convertible notes		127,428
Accounts payable	3	3,903
Amounts due to related parties	139,091	154,765
Derivative liabilities - current		3,879
Other current liabilities	36,914	8,255
<b>Total current liabilities</b>	<b>327,008</b>	<b>298,230</b>
Convertible notes	126,476	
Deferred tax liabilities - non-current	524	28,779
Liability for uncertain tax positions	6,625	12,633
<b>TOTAL LIABILITIES</b>	<b>460,633</b>	<b>339,642</b>
Equity:		
Common shares - no par value: unlimited authorized shares, 58,496,685 and 59,180,624 shares issued and outstanding at December 31, 2017 and 2018, respectively	702,162	702,931
Additional paid-in capital	417	10,675
Retained earnings	383,680	622,015
Accumulated other comprehensive loss	(54,034)	(110,149)
<b>TOTAL EQUITY</b>	<b>1,032,225</b>	<b>1,225,472</b>
<b>TOTAL LIABILITIES AND EQUITY</b>	<b>1,492,858</b>	<b>1,565,114</b>



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**FINANCIAL INFORMATION OF PARENT COMPANY  
STATEMENTS OF OPERATIONS**

	Years Ended December 31		
	2016	2017	2018
	(In Thousands of U.S. Dollars)		
Net revenues	13,748	35,011	86,755
Cost of revenues	9,657	29,542	53,926
Gross profit	4,091	5,469	32,829
Operating expenses:			
Selling expenses	3,727	2,221	2,518
General and administrative expenses	17,167	18,390	18,970
Research and development expenses	589	645	795
Other operating loss, net		1,173	77
Total operating expenses	21,483	22,429	22,360
Loss from operations	(17,392)	(16,960)	10,469
Other income (expenses):			
Interest expense	(29,032)	(20,078)	(9,170)
Interest income	44,666	42,191	32,370
Gain (loss) on change in fair value of derivatives	30,988	(7,134)	(2,671)
Foreign exchange gain (loss)	(3,810)	(18,110)	22,255
Gain on repurchase of convertible notes	2,782		
Investment loss		(11,944)	
Other income (expenses), net:	45,594	(15,075)	42,784
Income (loss) before income taxes and equity in earnings (loss) of subsidiaries and unconsolidated investees	28,202	(32,035)	53,253
Income tax (expense) benefit	(6,599)	1,686	(12,133)
Equity in earnings of subsidiaries	43,596	130,048	195,950
Equity in earnings (loss) of unconsolidated investees	50	(127)	
Net income	65,249	99,572	237,070

Table of Contents**FINANCIAL INFORMATION OF PARENT COMPANY****STATEMENTS OF COMPREHENSIVE INCOME (LOSS)**

	<b>Years Ended December 31,</b>		
	<b>2016</b>	<b>2017</b>	<b>2018</b>
	<b>(In Thousands of U.S. Dollars)</b>		
Net income	65,249	99,572	237,070
Other comprehensive income (loss) (net of tax of nil):			
Foreign currency translation adjustment	(31,958)	37,780	(56,115)
Comprehensive income	33,291	137,352	180,955

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**FINANCIAL INFORMATION OF PARENT COMPANY**  
**STATEMENTS OF CASH FLOWS**

	Years Ended December 31,		
	2016	2017	2018
	(In Thousands of U.S. Dollars)		
<b>Operating activities:</b>			
Net income	65,249	99,572	237,070
Adjustments to reconcile net income to net cash provided by (used in) operating activities:			
Depreciation and amortization	32	33	21
Loss on disposal of subsidiaries		9,559	
Impairment loss of investment		3,686	
(Gain) loss on change in fair value of derivatives	(30,988)	7,134	2,671
Gain on repurchase of convertible notes	(2,782)		
Allowance for doubtful accounts	(844)	2,666	(212)
Equity in earnings of subsidiaries	(43,596)	(130,048)	(195,950)
Equity in loss (earnings) of unconsolidated investees	(50)	127	
Share-based compensation	7,757	9,314	10,259
Changes in operating assets and liabilities:			
Inventories	146		
Accounts receivable trade	3,010	(6,739)	(5,089)
Amounts due from related parties	21,731	57,539	(184,755)
Advances to suppliers	226	(60)	60
Prepaid expenses and other current assets	6,955	(5,715)	(2,749)
Other non-current assets	(2,039)	1,016	(149)
Accounts payable	(4)		3,900
Advances from customers	(1,413)	(1,069)	
Amounts due to related parties	(129,307)	66,038	15,674
Accrued warranty costs	(12,381)	(10,639)	(76)
Other liabilities	(297)	23,505	(25,958)
Liability for uncertain tax positions	(7,413)	833	6,008
Deferred taxes	199	(6,106)	9,230
Net settlement of derivatives	17,043	(6,358)	21,450
<b>Net cash provided by (used in) operating activities</b>	<b>(108,766)</b>	<b>114,288</b>	<b>(108,595)</b>
<b>Investing activities:</b>			
Investment in subsidiaries		(64,185)	(1,051)
Proceeds from disposal of subsidiaries		61,749	
Purchase of property, plant and equipment		(26)	
Funding of loans to subsidiaries		(74,458)	(94,000)
Repayment of loans from subsidiaries	299,578		375,635
<b>Net cash provided by (used in) investing activities</b>	<b>299,578</b>	<b>(76,920)</b>	<b>280,584</b>
<b>Financing activities:</b>			
Repayment of short-term borrowings	(190,000)	(49,000)	(151,000)
Proceeds from issuance of common shares	23,864		
Issuance costs paid for common shares offering	(456)		
Payment for repurchase of convertible notes	(19,667)		
Proceeds from exercise of stock options	707	879	769
<b>Net cash used in financing activities</b>	<b>(185,552)</b>	<b>(48,121)</b>	<b>(150,231)</b>
<b>Effect of exchange rate changes</b>	<b>(24,630)</b>	<b>6,362</b>	<b>(29,618)</b>



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Net decrease in cash and cash equivalents	(19,370)	(4,391)	(7,860)
Cash and cash equivalents at the beginning of the year	40,718	21,348	16,957
Cash and cash equivalents at the end of the year	21,348	16,957	9,097
<b>Supplemental disclosure of cash flow information:</b>			
Interest paid (net of amounts capitalized)	29,288	18,375	10,154

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Table of Contents**Appendix 1****Major Subsidiaries of CSI**

The following table sets forth information concerning CSI's major subsidiaries:

<b>Subsidiary</b>	<b>Place and Date of Incorporation</b>	<b>Attributable Equity Interest Held</b>	<b>Principal Activity</b>
CSI Solartronics (Changshu) Co., Ltd.	PRC November 23, 2001	100%	Developing solar power project
CSI Solar Technologies Inc.	PRC August 8, 2003	100%	Sales and marketing of solar products
CSI New Energy Holding Co., Ltd.	PRC January 7, 2005	100%	Investment holding
Canadian Solar Manufacturing (Luoyang) Inc.	PRC February 24, 2006	100%	Manufacture of solar modules, ingots and wafers
Canadian Solar Manufacturing (Changshu) Inc.	PRC August 1, 2006	100%	Production of solar modules
CSI Cells Co., Ltd.	PRC August 23, 2006	100%	Manufacture of solar cells
Canadian Solar (USA) Inc.	USA June 8, 2007	100%	Sales and marketing of modules
Canadian Solar Japan K.K.	Japan June 21, 2009	100%	Sales and marketing of modules
Canadian Solar Solutions Inc.	Canada June 22, 2009	100%	Developing solar power project and manufacture of solar modules
CSI Solar Power Group Co., Ltd. (formerly named/known as "CSI Solar Power (China) Inc.")	PRC July 7, 2009	100%	Investment holding and trading
Canadian Solar EMEA GmbH	Germany August 21, 2009	100%	Sales and marketing of modules
Canadian Solar (Australia) Pty Limited	Australia February 3, 2011	100%	Developing solar power project
Canadian Solar International Limited	Hong Kong March 25, 2011	100%	Sales and marketing of modules
Canadian Solar O and M (Ontario) Inc.	Canada May 10, 2011	100%	Solar farm operating and maintenance service
Suzhou SanySolar Materials Technology Co., Ltd.	PRC August 17, 2011	99.73%	Production of solar module materials
Canadian Solar South East Asia Pte. Ltd.	Singapore September 19, 2011	100%	Sales and marketing of modules
Canadian Solar South Africa (Pty) Ltd	South Africa June 22, 2012	100%	Sales and marketing of modules
Canadian Solar Brazil Commerce, Import and Export of Solar Panels Ltd.	Brazil November 14, 2012	100%	Sales and marketing of solar modules, and provide solar energy solution to customer
Canadian Solar Construction (USA) LLC	USA May 20, 2014	100%	Solar farm operating and maintenance service
Canadian Solar Projects K.K.	Japan May 20, 2014	100%	Developing solar power project
CSI&GCL Solar Manufacturing (Yan Cheng) Inc.	PRC May 29, 2014	80%	Research and developing, manufacture and sales of solar cells, and solar power projects development
Canadian Solar UK Ltd.	United Kingdom May 29, 2014	100%	Sales and marketing of modules
Canadian Solar UK Projects Ltd.	United Kingdom August 29, 2014	100%	Developing solar power project
Changshu Tegu New Material Technology Co., Ltd.	PRC September 2, 2014	100%	EVA solar packaging film research and development, production, and sales
Changshu Tlian Co., Ltd.	PRC December 26, 2014	100%	Junction box and connector research, development, production and sales

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Recurrent Energy Group Inc.

USA  
January 22, 2015

100% Developing solar power project

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Subsidiary	Place and Date of Incorporation	Attributable Equity Interest Held	Principal Activity
Recurrent Energy, LLC	USA March 31, 2015	100%	Developing solar power project
PT. Canadian Solar Indonesia	Indonesia February 26, 2015	67%	Production of solar modules
Canadian Solar Manufacturing Vietnam Co., Ltd.	Vietnam June 25, 2015	100%	Production of solar modules
Canadian Solar Energy Private Limited	India May 06, 2015	100%	Sales and marketing of modules
Canadian Solar MSS (Australia) Pty Ltd (formerly named/known as "Canadian Solar Australia 1 Pty Ltd.")	Australia August 03, 2015	100%	Sales and marketing of modules
Canadian Solar Energy Holding Company Limited	Hong Kong September 22, 2015	100%	Project investment, financing, trading of solar modules
Canadian Solar Energy Singapore Pte. Ltd.	Singapore October 29, 2015	100%	Development & Ownership of solar PV projects
Canadian Solar Manufacturing (Thailand) Co., Ltd.	Thailand November 20, 2015	99.99992%	Cells and module production
Canadian Solar Sunenergy (Suzhou) Co., Ltd.	PRC May 12, 2016	100%	Production of solar modules
Canadian Solar Sunenergy (Baotou) Co., Ltd.	PRC August 18, 2016	100%	Production of solar modules, ingots and wafers
Canadian Solar Middle East DMCC	United Arab Emirates March 28, 2017	100%	Sales and marketing of modules
CSI Investment Management (SuZhou) Co., Ltd.	PRC May 05, 2017	100%	Investment management & assets management
CSI Cells (Yancheng) Co., Ltd.	PRC May 18, 2017	*	Production of solar cells
CSI Modules (DaFeng) Co., Ltd.	PRC May 16, 2017	**	Production of solar modules
Suzhou Gaochuangte New Energy Development Co., Ltd.	PRC June 12, 2017	80%	Design, engineering construction and management of solar power project
Canadian Solar Construction (Australia) Pty Ltd	Australia July 04, 2017	100%	Providing engineering, procurement and construction service
CSUK Energy Systems Construction and Generation JSC	Turkey October 30, 2017	100%	Construction of power plants generating electricity by utilizing renewable energy sources
CSI Modules (JiaXing) Co., Ltd.	PRC November 3, 2017	100%	Production of solar modules
CSI Wafer (LuoYang) Co., Ltd.	PRC November 27, 2017	100%	Production of solar cells and wafers
Canadian Solar Manufacturing Taiwan Co., Ltd.	PRC December 05, 2017	100%	Production of solar modules
Canadian Solar Argentina Investment Holding Ltd	Argentina January 23, 2018	100%	Developing solar power project
Changshu Xingu Photovoltaic Material Technology Co., Ltd.	PRC March 19, 2018	100%	EVA solar packaging film research and development, production and sales

\*

CSI Cells holds 52% equity rights of CSI Cells (Yancheng) Co., Ltd. A limited partnership fund, of which CSI Cells holds 37.33% shares as a limited partner and a wholly-owned subsidiary of CSI Solar Power Group Co., Ltd. holds 0.17% shares as a general partner, holds 48% equity rights of CSI Cells (Yancheng) Co., Ltd.

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CSI Changshu Manufacturing holds 3.12% equity rights of CSI Modules (Dafeng) Co., Ltd. A limited partnership fund, of which CSI Changshu Manufacturing holds 20% shares as a limited partner and a wholly-owned subsidiary of CSI Solar Power Group Co., Ltd. holds 0.067% shares as a general partner, holds 96.88% equity rights of CSI Modules (Dafeng) Co., Ltd.