E. Merrick Parrott
Associate
Telephone: 919.835.4504
Direct Fax: 919.834.4564
merrickparrott@parkerpoe.com

Atlanta, GA
Charleston, SC
Charlotte, NC
Columbia, SC
Greenville, SC
Raleigh, NC
Spartanburg, SC
Washington, DC

September 17, 2020

VIA ELECTRONIC FILING

Kimberley Campbell
Chief Clerk
North Carolina Utilities Commission
430 North Salisbury Street
Raleigh, North Carolina 27603

Re: Docket No. EMP-114 Sub 0
Oak Trail Solar, LLC - Application for a Certificate
of Public Convenience and Necessity for a Merchant Plant

Dear Clerk Campbell:

Enclosed for filing is Oak Trail Solar, LLC's Application for a Certificate of Public Convenience and Necessity for a Merchant Plant.

We propose the following schedule for the Commission's consideration of this application:

Thursday, October 1	Public Staff Certificate of Completeness to be filed
Week of October 12	Procedural Order Issued
Week of November 16	Petitions to Intervene & direct testimony of Public Staff and intervenors
Week of November 30	Applicant's Rebuttal Testimony
Week of December 7	Public Hearing in Currituck County
Week of December 14	Evidentiary Hearing in Raleigh

We have discussed the schedule with the Public Staff and understand they are in general agreement with this proposed schedule.

Thank you for your assistance. Please contact me if you have any questions.

Sincerely,

/s/ E. Merrick Parrott

Enclosure

cc: Reita Coxton, Public Staff (w/ encl., via email)

STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. EMP-114 Sub 0

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of the Application of Oak Trail Solar, LLC for a Certificate of Public Convenience and Necessity	**)** **)** **)** **)**	**APPLICATION FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR A MERCHANT PLANT**

Oak Trail Solar, LLC ("Oak Trail" or the "Applicant"), through counsel, hereby applies to the North Carolina Utilities Commission (the "Commission") pursuant to G.S. § 62-110.1 and Commission Rule R8-63 for a Certificate of Public Convenience and Necessity authorizing construction of solar photovoltaic ("PV") facility with a capacity up to 100 MW_{AC} to be located in Currituck County (the "Facility").

In support of its application, Oak Trail provides the Commission the attached three exhibits in compliance with Rule R8-63.

WHEREFORE, Oak Trail Solar, LLC respectfully requests that the Commission issue a Certificate of Public Convenience and Necessity pursuant to G.S. § 62-110.1 and Commission Rule R8-63 for the Facility, as more specifically described herein.

Respectfully submitted this 17th day of September, 2020.

By: E. Merrick Parrott

Katherine E. Ross
N.C. State Bar No. 38468
Merrick Parrott
N.C. State Bar No. 47999
Parker Poe Adams & Bernstein LLP
PNC Plaza
301 Fayetteville Street, Suite 1400
Raleigh, North Carolina 27601
Tel. 919-828-0564
Fax 919-834-4564
Email: katherineross@parkerpoe.com
merrickparrott@parkerpoe.com

Attorneys for Oak Trail Solar, LLC

Oak Trail Solar, LLC
Application Exhibit 1

(i) The Applicant's full and correct name, business address, and business telephone number are:

Oak Trail Solar, LLC
11757 Katy Freeway, Suite 400
Houston, TX 77079
(877) 228-3331

The electronic mailing address for purposes of this filing is:

MerrickParrott@parkerpoe.com

(ii) Oak Trail Solar, LLC ("Oak Trail") is a Delaware limited liability company with its principal place of business in Tempe, Arizona. Oak Trail was formed February 25, 2020. Oak Trail has obtained authority from the North Carolina Secretary of State to conduct business in North Carolina. A true and correct copy of the Application for Certificate of Authority is included as **Application Addendum 1**. Oak Trail's principal participants and officers are Kathryn Arbeit – Vice President, Project Development, and Beth Deane – Vice President and Assistant Secretary.

Oak Trail is a wholly owned indirect subsidiary of First Solar, Inc. ("First Solar"). First Solar is a leading global provider of comprehensive photovoltaic ("PV") solar systems, with over 20 GW of modules shipped worldwide. First Solar is one of the largest and most experienced PV solar developers in the world, with over 4.7 GW of solar projects in development, over 5.4 GW of solar constructed, and over 3.8 GW of solar in operation. First Solar successfully developed five of the largest solar PV projects in the United States, totaling more than 1.9 GW of solar energy. First Solar is headquartered in Tempe, Arizona with regional development offices in the United States, Mexico, Brazil, Europe, Dubai, Asia, and India.

Correspondence, documents, and filings regarding this application should be sent as follows:

Matt Crook
Oak Trail Solar, LLC
11757 Katy Freeway, Suite 400
Houston, TX 77079
Matt.Crook@firstsolar.com

with copies to:

Merrick Parrott
Parker Poe Adams & Bernstein LLP
301 Fayetteville Street, Suite 1400
Raleigh, North Carolina 27601
merrickparrott@parkerpoe.com
919-835-4504

(iii) A copy of First Solar's most recent annual report to stockholders is included as **Application Addendum 2**.

(iv) First Solar has an ownership interest in and/or operates the following projects in the Southeastern Electric Reliability Council region:

Project Name	Location	Status	Type of Facility	Capacity (MW)	COD
Ridgely	Lake County, TN	Development	Solar	177 MWac	6/1/2023
Shellman	Randolph County, GA	Development	Solar	100 MWac	11/30/2023
Hawkinsville	Pulaski County, GA	Development	Solar	300 MWac	11/30/2023

Oak Trail Solar, LLC
Application Exhibit 2

(i) The Applicant proposes to construct a solar PV facility of up to 100 MW_{AC} to be built on approximately 880 acres, which constitutes the "Facility Site" and is the subject of this CPCN application. The nameplate generating capacity of the Facility will be 100 MW_{AC} with anticipated gross capacity of 245,000 MWh and net capacity of 218,460 MWh per year. Solar is an intermittent energy source, and therefore, the maximum dependable capacity is 0 MW. Per the Interconnection Request with PJM Interconnection, L.L.C. ("PJM"), Oak Trail has been assigned a total of 67.3 MW_{AC} of capacity. The anticipated beginning date for construction is December 2021 and the expected commercial operation date is as early as November 2022. The expected life of the Facility is 30+ years. The estimated construction costs are included as ***Confidential*** **Application Addendum 3** because it contains confidential information within the scope of G.S. §132.1.2.

(ii) Attached as **Application Addendum 4** is a color map in compliance with the requirements for Rule R8-63-(b)(2)(ii). The map reflects the preliminary layout of the Facility, including the solar arrays, inverters, the collection system, access roads, interconnection facilities, the proposed point of interconnection, and the existing Virginia Electric and Power Company ("VEPCO") d/b/a Dominion Energy North Carolina Power ("DENC") transmission line to which the Facility will interconnect. The Facility will consist of approximately (185,280) 120 Wp First Solar Series 4 PV modules (or equivalent), and approximately (257,090) 455 Wp First Solar Series 6 PV modules (or equivalent) affixed to ground mounted racks supported on driven piles. The Facility will utilize approximately (133) 840kW Toshiba Mitsubishi-Electric Industrial Systems Corporation inverters (or equivalent) and will be interconnected to the grid operated by DENC.

(iii) An e911 street address has not been assigned to the Facility at this time. The Applicant will notify the Commission of the e911 street address when it is received. The Facility is located in Currituck County south of S. Mills Road (NC 1227), on the east and west sides of Puddin Ridge Road, and on the north and south sides of Cooper Garrett Road, near Moyock. The GPS coordinates of the approximate center of the Facility are: 36.506 N; 76.187 W.

(iv) The Facility is not a natural gas fired facility.

(v) The following permits may be required for the Facility. Applicant will secure all applicable federal, state, and local permits required for construction:

Federal: Oak Trail has consulted with the United States ("U.S.") Fish and Wildlife Service ("USFWS") and the U.S. Army Corps of Engineers ("USACE") about environmentally sensitive areas within or near the Facility Site boundary, and no permits from USFWS or USACE are anticipated. To the extent that the USACE determines that there are jurisdictional features on the site, the Facility will be designed to avoid them or will seek appropriate coverage under a Nationwide Permit. The Facility is being designed to minimize environmental impacts. No additional wildlife studies are anticipated. Oak Trail anticipates it will file a certification of Exempt Wholesale Generator status pursuant to Section 32 of the Public Utility Holding Company Act of 1935 and will apply for Market Based Rates from the Federal Energy Regulatory Commission prior to commercial operation.

State: The Applicant anticipates the following state permits will be required: (1) a Stormwater Management Permit from the Department of Environmental Quality, (2) an Erosion and Sedimentation Control Plan and Stormwater General Permit Coverage for Construction-Related Activities, and (3) N.C. Department of Transportation Driveway Permit(s). Applications for such permits have not yet been filed.

Currituck County: The Applicant anticipates the following local permits will be required from Currituck County: (1) a Use Permit; (2) a Major Site Plan approval; and (3) a Building Permit. The Applicant anticipates its Use Permit application will run contemporaneously with this CPCN application, it will apply for Major Site Plan approval within the next several months, and the Building Permit will be applied for prior to construction.

(vi) The Facility will interconnect with DENC and is assigned PJM queue positions AD2-160 and AE2-253. The Facility received a System Impact Study for queue position AD2-160 in June, 2019, and a System Impact Study for queue position AE2-253 in February, 2020. The System Impact Studies are being provided as ***Confidential* Application Addendum 5** and ***Confidential* Application Addendum 6**, respectively, because they contain confidential information within the scope of G.S. §132.1.2. The Facility should receive a Facilities Study and Interconnection Agreement ("IA") by September 30, 2020 and the IA should be signed by November 30, 2020.

A collection substation (the "Collection Substation") will be constructed by Oak Trail. The Collection Substation will occupy approximately two (2) acres and will be located near the point of interconnection ("POI") on the existing 230 kV DENC transmission line. The Collection Substation will be fenced and locked in accordance with industry standards to provide safety and security. The Collection Substation will consist of circuit breakers, switching devices and auxiliary equipment. A three-breaker ring bus interconnection substation will be constructed, owned, and operated by DENC and a short generator tie line will connect the Facility to the transmission system. The power that is generated from the Facility will flow into the existing 230 kV DENC transmission line. A diagram of the interconnection facilities is included as **Application Addendum 7.**

Oak Trail Solar, LLC
Application Exhibit 3

Under North Carolina's Renewable Energy and Energy Efficiency Portfolio Standard ("REPS" or "Senate Bill 3"), investor-owned utilities in North Carolina are required to meet up to 12.5% of their energy needs through renewable energy resources or energy efficiency measures by 2021. Rural electric cooperatives and municipal electric suppliers are subject to a 10% REPS requirement since 2018. G.S. § 62-133.8(8) defines solar as a renewable energy resource. The Facility will provide a significant source of RECs for use by Electric Power Suppliers to demonstrate compliance with Senate Bill 3. This Facility is expected to generate approximately 218,460 RECs annually. North Carolina has also shown a commitment to clean energy through its Clean Energy Plan finalized by the North Carolina Department of Environmental Quality in October, 2019, which sets a statewide carbon neutrality goal by 2050.[1]

In addition to North Carolina, demand for renewable power is expected to increase in the Southeast over the expected lifetime of the Facility. DENC's parent company, Dominion Energy, has established a company-wide commitment to achieve net zero carbon dioxide and methane emissions by 2050. Dominion Energy's commitment is consistent with state-level requirements set by the Virginia General Assembly through the Virginia Clean Economy Act ("VCEA"), which became law on July 1, 2020. The VCEA establishes a mandatory renewable portfolio standard aimed at 100% clean energy from Dominion Energy's generation fleet by 2045, requires the development of significant energy efficiency, solar, wind, and energy storage resources, and requires the retirement of all generation units that emit carbon dioxide by 2045 (unless such retirement would threaten grid reliability and security). Notably, the VCEA requires Dominion Energy to

[1] *https://files.nc.gov/ncdeq/climate-change/clean-energy-plan/NC_Clean_Energy_Plan_OCT_2019_.pdf*

seek all necessary approvals for at least 16,100 MW of new solar and onshore wind resources by December 31, 2035.[2]

Oak Trail has reviewed the Integrated Resource Plan ("IRP") of DENC filed May 1, 2020.[3] DENC's IRP forecasts its load serving entity peak and energy requirements are estimated to grow at approximately 1.0% and 1.3% annually throughout the 15 year planning period.[4] Each Alternative Plan in the IRP includes a large amount of solar resources, ranging from 11,520 MW to approximately 40,640 MW over the 25-year study period.[5] DENC recommends Alternative Plan B, which calls for 15,920 MW of solar over a 15-year period and 31,400 MW of solar over the 25-year period.[6] DENC's IRP also states it anticipates it will soon become a full participant in the Regional Greenhouse Gas Initiative, a regional effort to cap and reduce CO2 emissions from the power sector.[7]

In addition to the needs of Dominion Energy, including DENC, significant need for solar developments exists in the PJM region. PJM is a regional transmission organization ("RTO") that coordinates the movement of wholesale electricity in all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia and the District of Columbia. This region includes over 65 million people, and projections of load are increasing, as described in detail below.

Summer peak load in PJM is expected to grow by 0.6% per year over the next 10 years, and by 0.5% over the next 15 years.[8] For the Dominion Virginia Power zone, summer peak load growth is expected to grow by 1.2% per year over the next 10 years,

[2] Code of Virginia § 56-585.5(D)(2). The VCEA follows the Virginia General Assembly's passage of the Grid Transformation and Security Act of 2018, which had found that up to an additional 5,000 MW of utility-scale electric generating facilities powered by solar and wind energy is in the public interest.
[3] 2020 Integrated Resource Plan of Virginia Electric and Power Company, d/b/a Dominion Energy North Carolina, Docket No. E-100, Sub 165, May 1, 2020.
[4] *Id.* at 25.
[5] *Id.* at 5.
[6] *Id.* at 41.
[7] *Id.* at 11-13.
[8] https://www.pjm.com/-/media/library/reports-notices/load-forecast/2020-load-report.ashx?la=en at 37-38.

and 1.0% per year over the next 15 years.[9] The anticipated 10 year summer peak load growth in the Dominion Virginia Power zone represents 4.6% growth over the January 2019 load forecast report.[10]

Winter peak load growth in PJM is projected to average 0.4% per year over the next 10 year period, and 0.3% over the next 15 years.[11] Winter peak load growth for the Dominion Virginia Power zone is expected to grow by 1.4% per year over the 10 years, and 1.2% per year over the next 15 years.[12] The anticipated 10 year winter peak load growth in the Dominion Virginia Power zone represents 15.7% growth over the January 2019 load forecast report.[13] The PJM service area in Dominion Energy territory, including North Carolina, is expected to average between 1.2% and 1.4% per year over the next 10 years versus the PJM RTO load growth projections to average 0.6% over the next 10 years.[14]

The Commission's *Order Denying Certificate of Public Convenience and Necessity for Merchant Plant Generating Facility* issued on June 11, 2020 in Docket EMP-105 Sub 0 (the "Friesian Order"), in part, found that "it is appropriate for the Commission to consider the total construction costs of a facility, including the cost to interconnect and to construct any necessary transmission network upgrades, when determining the public convenience and necessity of a proposed new generating facility."[15] The Commission also found that "the use of the levelized cost of transmission (LCOT) provides a benchmark as to the reasonableness of the transmission network upgrade cost associated with interconnecting a proposed new generating facility."[16] Consistent with the Friesian Order, the Applicant

[9] *Id.*
[10] *Id.* at 32.
[11] *Id.* at 41-42.
[12] *Id.*
[13] *Id.* at 34.
[14] https://www.pjm.com/-/media/library/reports-notices/state-specific-reports/2019/2019-north-carolina-state-infrastructure-report.ashx?la=en at 23.
[15] *Friesian Order* at 6.
[16] *Id.*

has calculated the LCOT for the Facility. Based on the costs identified in the System Impact Studies, the LCOT for the Facility is $1.94. This LCOT compares favorably to the average LCOTs identified in the 2019 Lawrence Berkeley National Laboratory Interconnection Cost Study ("LBNL Study") for solar in MISO ($1.56), PJM ($3.22), and EIA ($2.21) that the Public Staff referenced and the Commission cited in the Friesian Order. In addition to the Facility's reasonable construction costs and LCOT, Oak Trail has a fully executed Power Purchase Agreement ("PPA") with a large Commercial and Industrial customer for the entirety of the Facility's output, as well as the Renewable Energy Credits generated by the Facility.

A significant benefit of this Facility is that it will be privately financed and constructed, and will not affect ratepayers. While evidence for need for this independent renewable facility is strong, any risk of default is on private financiers and not North Carolina retail electric customers.

For the reasons set forth above, the Facility will promote the orderly expansion of generation and capacity while preventing costly overbuilding, the dual concerns of a sufficient demonstration of need for a proposed new generating facility.[17]

[17] *Id.* at 10.

Oak Trail Solar, LLC
Application Addendum 1

SOSID: 1959980
Date Filed: 3/9/2020 8:43:00 AM
Elaine F. Marshall
North Carolina Secretary of State
C2020 058 04100

State of North Carolina
Department of the Secretary of State

APPLICATION FOR CERTIFICATE OF AUTHORITY FOR LIMITED LIABILITY COMPANY

Pursuant to §57D-7-03 of the General Statutes of North Carolina, the undersigned limited liability company hereby applies for a Certificate of Authority to transact business in the State of North Carolina, and for that purpose submits the following:

1. The name of the limited liability company is Oak Trail Solar, LLC;

   and if the limited liability company name is unavailable for use in the State of North Carolina, the name the limited liability company wishes to use is _____.

2. The state or country under whose laws the limited liability company was formed is Delaware.

3. Principal office information: (*Select either a or b.*)

   a. ☒ The limited liability company has a principal office.

   The principal office telephone number: (415) 935-2510.

   The street address and county of the principal office of the limited liability company is:

   Number and Street: 135 Main Street, 6th Floor

   City: San Francisco State: CA Zip Code: 94105 County: San Francisco

   The mailing address, ***if different from the street address***, of the principal office of the corporation is:

   Number and Street: _____

   City: _____ State: _____ Zip Code: _____ County: _____

   b. ☐ The limited liability company does not have a principal office.

4. The name of the registered agent in the State of North Carolina is: C T Corporation System.

5. The street address and county of the registered agent's office in the State of North Carolina is:

   Number and Street: 160 Mine Lake Ct., Ste. 200

   City: Raleigh, State: NC Zip Code: 27615-6417 County: Wake

6. The North Carolina mailing address, ***if different from the street address,*** of the registered agent's office in the State of North Carolina is:

   Number and Street: _____

   City: _____ State: NC Zip Code: _____ County: _____

7. The names, titles, and usual business addresses of the current company officials of the limited liability company are: *(use attachment if necessary) (This document must be signed by a person listed in item 7.)*

Name and Title	***Business Address***
Kathryn Arbeit - VP, Project Development	135 Main Street, 6th Floor, San Francisco, CA 94105
Beth Deane - Chief Counsel- Project Development	135 Main Street, 6th Floor, San Francisco, CA 94105

8. Attached is a certificate of existence (or document of similar import), duly authenticated by the secretary of state or other official having custody of limited liability company records in the state or country of formation. **The Certificate of Existence must be less than six months old. A photocopy of the certification cannot be accepted.**

9. If the limited liability company is required to use a fictitious name in order to transact business in this State, a copy of the resolution of its managers adopting the fictitious name is attached.

10. (Optional): Please provide a business e-mail address: Privacy Redaction.
The Secretary of State's Office will e-mail the business automatically at the address provided above at no cost when a document is filed. The e-mail provided **will not** be viewable on the website. For more information on why this service is offered, please see the instructions for this document.

11. This application will be effective upon filing, unless a delayed date and/or time is specified: _____.

This the 27 day of February, 20 20

Oak Trail Solar, LLC
Name of Limited Liability Company

DocuSigned by:
Beth Deane
A01DB11FDF1845...
Signature of Company Official

Beth Deane - Authorized Representative
Type or Print Name and Title

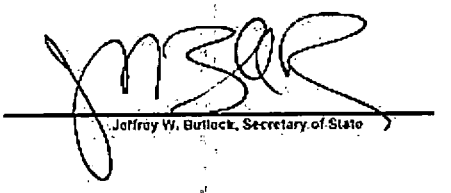
Notes:
1. **Filing fee is $250.** This document must be filed with the Secretary of State.

Delaware

The First State

I, JEFFREY W. BULLOCK, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY "OAK TRAIL SOLAR, LLC" IS DULY FORMED UNDER THE LAWS OF THE STATE OF DELAWARE AND IS IN GOOD STANDING AND HAS A LEGAL EXISTENCE SO FAR AS THE RECORDS OF THIS OFFICE SHOW, AS OF THE TWENTY-SEVENTH DAY OF FEBRUARY, A.D. 2020.

AND I DO HEREBY FURTHER CERTIFY THAT THE ANNUAL TAXES HAVE BEEN ASSESSED TO DATE.



7870172 8300

SR# 20201644268

You may verify this certificate online at corp.delaware.gov/authver.shtml

Authentication: 202475834

Date: 02-27-20

Oak Trail Solar, LLC
Application Addendum 2

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

Form 10-K

(Mark one)

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For the fiscal year ended December 31, 2019

or

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

Commission file number: 001-33156

First Solar, Inc.

(Exact name of registrant as specified in its charter)

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

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

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

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

Title of each class	Trading symbol(s)	Name of each exchange on which registered
Common stock, $0.001 par value	FSLR	The NASDAQ Stock Market LLC

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

None

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

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

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

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

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

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

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

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

The aggregate market value of the registrant's common stock held by non-affiliates of the registrant as of June 30, 2019, the last business day of the registrant's most recently completed second fiscal quarter, was approximately $5.4 billion (based on the closing price of the registrant's common stock on that date). As of February 14, 2020, 105,457,669 shares of the registrant's common stock, $0.001 par value per share, were outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

The information required by Part III of this Form 10-K, to the extent not set forth herein, is incorporated by reference from the registrant's definitive proxy statement relating to the Annual Meeting of Shareholders to be held in 2020, which will be filed with the Securities and Exchange Commission within 120 days after the end of the fiscal year to which this Form 10-K relates.

FIRST SOLAR, INC.

FORM 10-K FOR THE YEAR ENDED DECEMBER 31, 2019

TABLE OF CONTENTS

Throughout this Annual Report on Form 10-K, we refer to First Solar, Inc. and its consolidated subsidiaries as "First Solar," "the Company," "we," "us," and "our." When referring to our manufacturing capacity, total sales, and solar module sales, the unit of electricity in watts for megawatts ("MW") and gigawatts ("GW") is direct current ("DC" or "$_{DC}$") unless otherwise noted. When referring to our projects or systems, the unit of electricity in watts for MW and GW is alternating current ("AC" or "$_{AC}$") unless otherwise noted.

NOTE REGARDING FORWARD-LOOKING STATEMENTS

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

- structural imbalances in global supply and demand for PV solar modules;
- the market for renewable energy, including solar energy;
- our competitive position and other key competitive factors;
- reduction, elimination, or expiration of government subsidies, policies, and support programs for solar energy projects;
- our ability to execute on our long-term strategic plans;
- our ability to execute on our solar module technology and cost reduction roadmaps;
- the loss of any of our large customers, or their inability to perform under their contracts with us;
- our ability to attract new customers and to develop and maintain existing customer and supplier relationships;
- interest rate fluctuations and both our and our customers' ability to secure financing;
- our ability to successfully develop and complete our systems business projects;
- our ability to convert existing or construct production facilities to support new product lines;

- general economic and business conditions, including those influenced by U.S., international, and geopolitical events;
- environmental responsibility, including with respect to cadmium telluride ("CdTe") and other semiconductor materials;
- claims under our limited warranty obligations;
- changes in, or the failure to comply with, government regulations and environmental, health, and safety requirements;
- future collection and recycling costs for solar modules covered by our module collection and recycling program;
- our ability to protect our intellectual property;
- our ability to prevent and/or minimize the impact of cyber-attacks or other breaches of our information systems;
- our continued investment in R&D;
- the supply and price of components and raw materials, including CdTe;
- our ability to attract and retain key executive officers and associates; and
- all other matters discussed in Item 1A. "Risk Factors" and elsewhere in this Annual Report on Form 10-K, our subsequently filed Quarterly Reports on Form 10-Q, and our other filings with the Securities and Exchange Commission (the "SEC").

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

PART I

Item 1. *Business*

Company Overview

We are a leading global provider of comprehensive PV solar energy solutions. We design, manufacture, and sell PV solar modules with an advanced thin film semiconductor technology and also develop and sell PV solar power systems that primarily use the modules we manufacture. Additionally, we provide operations and maintenance ("O&M") services to system owners. We have substantial, ongoing R&D efforts focused on various technology innovations. We are the world's largest thin film PV solar module manufacturer and one of the world's largest PV solar module manufacturers.

In addressing the overall global demand for electricity, our high-efficiency CdTe modules, which leverage our Series 6™ ("Series 6") module technology, and power plant solutions compete favorably on an economic basis with traditional forms of energy generation and provide low cost electricity to end users. Our diverse capabilities facilitate the sale of these solutions and the adoption of our technology in key markets around the world. We believe our strategies and points of differentiation provide the foundation for our leading industry position and enable us to remain one of the preferred providers of PV solar energy solutions.

Business Strategy

Differentiated Technology

As a field-proven technology, our CdTe solar modules offer certain advantages over conventional crystalline silicon solar modules by delivering competitive efficiency, higher real-world energy yield, and long-term reliability. Proven to deliver up to 8% more usable energy per nameplate watt than monofacial crystalline silicon technologies in certain geographic markets and with a record of reliable system performance, our CdTe technology delivers more energy, more consistently, over the lifetime of a PV solar power system. Our Series 6 module technology, with its combination of high wattage, low manufacturing costs, a larger form factor, and balance of systems ("BoS") component compatibility, has further enhanced our competitive position since the launch of such technology in 2018.

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

Manufacturing Process

Our modules are manufactured in a high-throughput, automated environment that integrates all manufacturing steps into a continuous flow line. Such manufacturing process eliminates the multiple supply chain operators and time-consuming and resource-intensive batch processing steps that are used to produce crystalline silicon solar modules. At the outset of the production of our modules, a sheet of glass enters the production line and in a matter of hours is transformed into a completed module, which is flash tested, packaged, and ready for shipment. With more than 25 GW_{DC} of modules sold worldwide, we have a demonstrated history of manufacturing success and innovation. We have a global manufacturing footprint with facilities based in the United States, Malaysia, and Vietnam.

Diversified Capabilities

We are diversified across the solar value chain. Many of the efficiencies and capabilities that we deliver to our customers are not easily replicable for other industry participants that are not diversified in a similar manner. Accordingly, our operational model offers PV solar energy solutions that benefit from our wide range of capabilities, including advanced PV solar module manufacturing, project development, engineering and plant optimization, grid integration and plant control systems, construction services, and O&M services.

Financial Viability

We are committed to creating long-term shareholder value through a decision-making framework that delivers a balance of growth, profitability, and liquidity. This framework has enabled us to fund our Series 6 manufacturing and capacity expansion initiatives using cash flows generated by our operations despite substantial downward pressure on the price of solar modules and systems due to competition, demand fluctuations, and significant overcapacity in the industry. Our financial viability provides strategic optionality as we evaluate how to invest in our business and generate returns for our shareholders. Our financial viability and bankability also enable us to offer meaningful warranties, which provide us with a competitive advantage relative to many of our peers in the solar industry in the context of project financing and offering PV solar energy solutions to long-term owners. Furthermore, we expect our financial discipline and ability to manage operating costs to enhance our profitability as we continue to scale our business.

Sustainability

In addition to our financial commitments, we are also committed to minimizing the environmental impacts and enhancing the social and economic benefits of our products across their life cycle, from raw material sourcing through end-of-life module recycling. Accordingly, our modules and systems provide an ecologically leading solution to climate change, energy security, and water scarcity, which also enables our customers to achieve their sustainability objectives. On a lifecycle basis, our thin film module technology has the fastest energy payback time, smallest carbon footprint, and lowest water use of any PV solar technology on the market.

The energy payback time (which is the amount of time a system must operate to recover the energy required to produce it) of our module technology is facilitated by our specialized manufacturing process. In less than six months under high irradiance conditions, our systems produce more energy than was required to create them. This energy payback time represents a 50-fold energy return on investment over a theoretical 25-year system lifetime and an abundant net energy gain to the electricity grid. Our module technology also has a carbon footprint that is up to six times lower than the carbon footprint of conventional crystalline silicon modules and a fraction of the carbon footprint of conventional energy sources. Furthermore, our module technology displaces up to 98% of greenhouse gas emissions and other air pollutants when replacing traditional forms of energy generation. Our modules also use up to 400 times less water per MW hour than conventional energy sources and up to 24 times less water than other PV solar modules. In addition, our industry-leading recycling process further enhances our sustainability advantage by recovering approximately 90% of the glass for reuse in new glass products and over 90% of the semiconductor material for reuse in new modules.

Offerings and Capabilities

We are focusing on markets and energy applications in which solar power can be a least-cost, best-fit energy solution, particularly in regions with high solar resources, significant current or projected electricity demand, and/or relatively high existing electricity prices. We differentiate our product offerings by geographic market and localize the solution, as needed. Our consultative approach to our customers' solar energy needs and capabilities results in customized solutions to meet their economic goals. As a result, we have designed our product and service offerings according to the following business areas:

- *PV Solar Modules*. Our modules couple our leading-edge CdTe technology with the manufacturing excellence and quality control that comes from being one of the world's most experienced producers of advanced PV solar modules. Our technology demonstrates a proven performance advantage over most monofacial crystalline silicon solar modules of equivalent efficiency rating by delivering higher real-world energy yield and long-term reliability. We are able to provide such product performance, quality, and reliability to our customers due, in large part, to our consistent and sustained investments in R&D activities.

- *Utility-Scale Power Plants*. We have extensive, proven experience in the development, engineering, and construction of reliable grid-connected power systems for utility-scale generation. Our grid-connected systems support a diversified energy portfolio, reduce fossil-fuel consumption, mitigate the risk of fuel price volatility, and save costs, proving that centralized solar generation can deliver dependable and affordable solar electricity to the grid around the world. Our plant control systems provide reliability services, such as frequency control, voltage control, ramping capacity, and automated generation control, which enable expanded integration of PV solar power systems into the power grid. Such reliability services also help balance the grid during times of high renewable energy generation. Our solar energy systems also offer a meaningful value proposition by eliminating commodity price risks thereby providing a long-term fixed price with relatively low operating costs. When compared to the price of power derived from a conventional source of energy, a fixed price cannot be achieved unless the cost of hedging is included. Hedging costs of a commodity such as natural gas, along with the costs of credit support required for a long-term hedge, can significantly increase conventional energy costs. Additional benefits of our grid-connected power systems include reductions of fuel imports and improvements in energy security, enhanced peaking generation and faster time-to-power, and managed variability through accurate forecasting.

- *O&M Services*. By leveraging our extensive experience in plant optimization and advanced diagnostics, we have developed one of the largest and most advanced O&M programs in the industry, including more than 10 GW_{DC} of utility-scale PV solar power systems, while maintaining an average fleet system effective availability greater than 99%. Utilizing a state of the art global operations center, our team of O&M associates provide a variety of services to optimize system performance and comply with power purchase agreements ("PPA"), other project agreements, and regulations. Our products and services are engineered to enable the maximization of energy output and revenue for our customers while significantly reducing their unplanned maintenance costs. Plant owners benefit from predictable expenses over the life of the contract and reduced risk of energy loss. Our O&M program is compliant with the North American Electric Reliability Corporation ("NERC") standards and is designed to scale to accommodate the growing O&M needs of customers worldwide. We offer our O&M services to solar power plant owners that use either our solar modules or modules manufactured by third parties.

Following an evaluation of the long-term sustainable cost structure, competitiveness, and risk-adjusted returns of our U.S. project development business, we have determined it is in the best interest of our stockholders to explore options for this business line. This exploration may result in, among other possibilities, a partnership with a third party who possesses complimentary competencies or a sale of all or a portion of our U.S. project development business. This exploration of options for our U.S. project development business is not subject to any definitive timetable and there can be no assurances that this process will result in any transaction.

Market Overview

Solar energy is one of the fastest growing forms of renewable energy with numerous economic and environmental benefits that make it an attractive complement to and/or substitute for traditional forms of energy generation. In recent years, the price of PV solar power systems, and accordingly the cost of producing electricity from such systems, has dropped to levels that are competitive with or below the wholesale price of electricity in many markets. This rapid price decline has opened new possibilities to develop systems in many locations with limited or no financial incentives. Other technological developments in the industry, such as the advancement of energy storage capabilities, have further enhanced the prospects of solar energy as an alternative to traditional forms of energy generation. Furthermore, the fact that a PV solar power system requires no fuel provides a unique and valuable hedging benefit to owners of such systems relative to traditional energy generation assets. Once installed, PV solar power systems can function for over 35 years
with relatively less maintenance or oversight compared to many other forms of generation. In addition to these economic benefits, solar energy has substantial environmental benefits. For example, PV solar power systems generate no greenhouse gas or other emissions and use minimal amounts of water compared to traditional energy generation assets. Worldwide solar markets continue to develop, aided by the above factors as well as demand elasticity resulting from declining industry average selling prices, both at the module and system level, which have made solar power one of the most economically attractive sources of energy.

Module average selling prices in many global markets have declined in recent years and are expected to continue to decline to some degree in the future. In the aggregate, we believe manufacturers of solar cells and modules have significant installed production capacity, relative to global demand, and the ability for additional capacity expansion. We believe the solar industry may from time to time experience periods of structural imbalance between supply and demand (i.e., where production capacity exceeds global demand), and that such periods will continue to put pressure on pricing. Additionally, intense competition at the system level may result in an environment in which pricing falls rapidly, thereby further increasing demand for solar energy solutions but constraining the ability for project developers and diversified module manufacturers to sustain meaningful and consistent profitability. In light of such market realities, we are focusing on our strategies and points of differentiation, which include our advanced module technology, our manufacturing process, our diversified capabilities, our financial viability, and the sustainability advantage of our modules and systems.

Global Markets

We have established and continue to develop a global business presence. Energy markets are, by their nature, localized, with different drivers and market forces impacting electricity generation and demand in a particular region or for a particular application. Accordingly, our business is evolving worldwide and is shaped by the varying ways in which our offerings can be compelling and economically viable solutions to energy needs in various markets. The following represent the key markets for our modules and systems.

The Americas

United States. Multiple markets within the United States, which accounted for 87% of our 2019 net sales, exemplify favorable characteristics for a solar market, including (i) sizeable electricity demand, particularly around growing population centers and industrial areas; (ii) strong demand for renewable energy generation; and (iii) abundant solar resources. In those areas and applications in which these factors are more pronounced, our PV solar energy solutions compete favorably on an economic basis with traditional forms of energy generation. The market penetration of PV solar is also impacted by certain federal and state support programs, including the federal investment tax credit, as described below under “Support Programs.” We have significant experience and a market leadership position in developing and operating utility-scale power plants in the United States, particularly in California, other western states, and southeastern states. Currently, our solar projects in the United States represent the majority of the advanced-stage pipeline of projects that we are actively developing or constructing. See Item 7. “Management’s Discussion and Analysis of Financial Condition and Results of Operations – Systems Project Pipeline” for more information about these projects.

Other Americas. Outside the United States, we have drawn on our industry expertise and module technology advantages to make inroads in certain Central and South American markets. Accordingly, we continue to pursue module sale opportunities in Mexico and Brazil while monitoring opportunities in other countries with high growth potential.

Asia-Pacific

Australia. Australia is a promising region for PV solar energy with continued growth expected over the next several years. Much of this growth is being driven by several factors, including an increased demand for PPAs from Australian commercial and industrial companies, certain government programs, and continued procurement from local utilities as well as the emergence of a merchant power market. We continue to focus our efforts in the region on utility-scale project development, including our self-developed projects in Queensland, New South Wales, and Victoria, while increasing our O&M services and third-party module sales. In June 2019, we completed the sale of our 87 MW_{AC} Beryl project located in New South Wales.

Japan. Japan's electricity markets have various characteristics, which make them attractive markets for PV solar energy. In particular, Japan has few domestic fossil fuel resources and relies heavily on fossil fuel imports. Following the Fukushima earthquake in 2011, the country introduced certain initiatives to limit its reliance on nuclear power. Accordingly, the Japanese government announced a long-term goal of dramatically increasing installed solar power capacity and provided various incentives for solar power installations. In recent years, we have partnered with local companies to develop, construct, and operate various PV solar power systems, which are expected to mitigate Japan's dependence on fossil fuel imports and nuclear power. In 2019, we commenced construction of a 38 MW_{AC} project in Kyoto prefecture, a 17 MW_{AC} project in Ishikawa prefecture, and an 11 MW_{AC} project in Ibaraki prefecture. We continue to operate the 59 MW_{AC} Ishikawa project and provide O&M services to certain other projects we previously sold in 2018. We continue to pursue other utility-scale project development, O&M, and module sale opportunities in the region.

Europe, the Middle East, and India

Europe. Most markets across Europe reflect strong demand for PV solar energy due to its ability to compete economically with more traditional forms of energy generation. In particular, France, Germany, Greece, Italy, the Netherlands, Portugal, and Spain are all running tenders in which utility-scale PV solar projects can bid for capacity. Such tenders and other recent market developments indicate the potential for further growth in the demand for PV solar energy beyond the region's installed generation capacity of approximately 135 GW_{DC}. We continue to pursue module sales activities in many of the countries mentioned above.

The Middle East. The market potential for solar energy in the Middle East continues to be driven by a combination of strong economic fundamentals, aggressive tariff pricing, abundant solar resources, and robust policy. Egypt, Jordan, Oman, Qatar, Saudi Arabia, and The United Arab Emirates (the "UAE") have established utility-scale solar programs, which are at varying degrees of maturity. Jordan and the UAE lead the region with policy mechanisms designed to ramp up the amount of renewable energy in their generation portfolios. While there are various motives for investing in solar energy, including energy security, diversification of generation portfolios, and the minimization of domestic consumption of hydrocarbons, the common factor is that the economics of PV solar energy have made it a compelling energy generation source. We have sold approximately 400 MW_{DC} of modules in the region and continue to pursue additional module sales opportunities.

India. India continues to represent one of the largest and fastest growing markets for PV solar energy with an installed generation capacity of over 35 GW_{DC}, another 12 GW_{DC} of projects in development or construction, and over 20 GW_{DC} of new procurement programs announced. In addition, the government has established aggressive renewable energy targets, which include increasing the country's solar capacity to 100 GW_{AC} by 2022. These targets, along with various policy and regulatory measures, help create significant and sustained demand for PV solar energy. Accordingly, we expect to continue selling modules to local integrators and operators of systems to address the region's energy needs. We currently own and operate three projects with an aggregate capacity of 50 MW_{AC} located in Telangana and Karnataka, for which we have secured rights to sell power under separate 25-year PPAs to state owned electricity distribution

companies. In addition, we continue to maintain our strong module presence in the region with approximately 2 GW_{DC} of installed modules.

Support Programs

Although we compete in many markets that do not require solar-specific government subsidies or support programs, our net sales and profits remain subject, in the near term, to variability based on the availability and size of government subsidies and economic incentives, such as quotas, renewable portfolio standards, and tendering systems. In addition to these support programs, financial incentives for PV solar energy generation may include tax and production incentives. Although we expect to become less impacted by and less dependent on these forms of government support over time, such programs continue to influence the demand for PV solar energy around the world.

In Europe, renewable energy targets, in conjunction with tenders for utility-scale PV solar and other support measures, have contributed to growth in PV solar markets. Renewable energy targets prescribe how much energy consumption must come from renewable sources, while incentive policies and competitive tender policies are intended to support new supply development by providing certainty to investors. Various European Union ("EU") directives on renewable energy have set targets for all EU member states in support of the current goal of a 32% share of energy from renewable sources in the EU by 2030.

Tax incentive programs exist in the United States at both the federal and state level and can take the form of investment and production tax credits, accelerated depreciation, and sales and property tax exemptions and abatements. At the federal level, investment tax credits for business and residential solar systems have gone through several cycles of enactment and expiration since the 1980s. In 2015, the U.S. Congress extended the 30% federal energy investment tax credit ("ITC") for both residential and commercial solar installations through 2019. Among other requirements, such credits require projects to have commenced construction by a certain date, which may be achieved by certain qualifying procurement activities. Accordingly, projects that commenced construction in 2019 were eligible for the 30% ITC. The credit will step down to 26% for projects that commence construction in 2020, 22% for projects that commence construction in 2021, and 10% for projects that commence construction thereafter. Over the next several years, we may advance the construction of various U.S. systems projects or procure the associated modules or BoS parts, by specified dates, for such projects to qualify for certain federal investment tax credits. The ITC has been an important economic driver of solar installations and qualifying procurement activities in the United States, and its extension has contributed to greater medium-term demand. The positive impact of the ITC depends to a large degree on the availability of tax equity for project financing, and any significant reduction in the availability of tax equity in the future could make it more difficult to develop and construct projects requiring financing.

The majority of states in the United States have also enacted legislation adopting Renewable Portfolio Standard ("RPS") mechanisms. Under an RPS, regulated utilities and other load serving entities are required to procure a specified percentage of their total retail electricity sales to end-user customers from eligible renewable resources, such as solar energy generation facilities, by a specified date. Some programs may further require that a specified portion of the total percentage of renewable energy must come from solar generation facilities or other technologies. RPS mechanisms and other legislation vary significantly from state to state, particularly with respect to the percentage of renewable energy required to achieve the state's RPS, the definition of eligible renewable energy resources, and the extent to which renewable energy credits qualify for RPS compliance.

Measured in terms of the volume of renewable electricity required to meet its RPS mandate, California's RPS program is one of the most significant in the United States. In addition to serving as a template for other states, the California market for renewable energy has historically been a key region for First Solar and has led the western United States in renewable energy demand for the past several years. First enacted in 2002, California's RPS statute has been amended several times to increase the overall percentage requirement as well as to accelerate the target date for program compliance. Pursuant to the passage of SB100 by the California legislature in 2018, the California RPS program now requires utilities and other obligated load serving entities to procure 60% of their total retail electricity demand from eligible renewable resources by 2030.

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

Business Segments

We operate our business in two segments. Our modules segment involves the design, manufacture, and sale of CdTe solar modules, which convert sunlight into electricity. Third-party customers of our modules segment include integrators and operators of PV solar power systems. Our second segment is our systems segment, through which we provide power plant solutions, which include (i) project development, (ii) engineering, procurement, and construction ("EPC") services, and (iii) O&M services. We may provide any combination of individual products and services within such capabilities (including, with respect to EPC services, by contracting with third parties) depending upon the customer and market opportunity. Our systems segment customers include utilities, independent power producers, commercial and industrial companies, and other system owners. As part of our systems segment, we may also temporarily own and operate certain of our systems for a period of time based on strategic opportunities or market factors. See Note 21. "Segment and Geographical Information" to our consolidated financial statements for further information regarding our business segments.

Modules Business

Solar Modules

Since the inception of First Solar, our flagship module has used our advanced thin film semiconductor technology. In April 2018, we commenced commercial production of our Series 6 module technology, which represents the latest generation of our flagship module. Each Series 6 module is a glass laminate approximately 4ft x 6ft (123cm x 201cm) in size that encapsulates thin film semiconductor materials. At the end of 2019, our Series 6 modules had an average power output of approximately 430 watts. Our modules offer up to 8% more energy than monofacial crystalline silicon solar modules of equivalent nameplate capacity and generally include anti-reflective coated glass, which further enhances energy production. Our module semiconductor structure is a single-junction polycrystalline thin film that uses CdTe as the absorption layer. CdTe has absorption properties that are well matched to the solar spectrum and can deliver competitive wattage using approximately 1-2% of the amount of semiconductor material used to manufacture conventional crystalline silicon modules. Due to its minimal thickness, our thin-film CdTe semiconductor technology is also immune to cell cracking and its resulting power output loss, a common failure often observed in crystalline silicon modules caused by adverse manufacturing, handling, weather, or other conditions.

Manufacturing Process

We manufacture our solar modules on integrated production lines in an automated, proprietary, and continuous process, which includes the following three stages: (i) the deposition stage, (ii) the cell definition and treatment stage, and (iii) the assembly and test stage. In the deposition stage, panels of transparent oxide-coated glass are robotically loaded onto the production line where they are cleaned, laser-mark identified with a serial number, heated, and coated with thin layers of CdTe and other semiconductor materials using our proprietary vapor transport deposition technology, after which the semiconductor-coated plates are cooled rapidly to increase glass strength. In the cell definition and treatment stage, we use high-speed lasers to transform the large continuous semiconductor coating on the glass plate into a series of interconnected cells that deliver the desired current and voltage output. In this stage, we also treat the semiconductor film using proprietary chemistries and processes to improve the device's performance, and we apply a metal sputtered back contact. In the assembly and test stage, we apply busbars, inter-layer material, and a rear glass

cover sheet that is laminated to encapsulate the device. We then apply anti-reflective coating material to the substrate glass to further improve the module's performance by increasing its ability to absorb sunlight. Finally, junction boxes, termination wires, and an under-mount frame (for Series 6 modules) are applied to complete the assembly.

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

Research and Development

Our R&D model differentiates us from much of our competition due to its vertical integration, from advanced research to product development, manufacturing, and applications. We continue to devote substantial resources to our R&D efforts, which generally focus on continually improving the wattage and energy yield of our solar modules. We also focus our R&D activities on continuously improving module durability and manufacturing efficiencies, including throughput improvement, volume ramp, and material cost reduction. Based on publicly available information, we are one of the leaders in R&D investment among PV solar module manufacturers, maintaining a rate of innovation that enables rapid wattage gains and cost reductions.

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

We regularly produce research cells in our laboratories, some of which are tested for performance and certified by independent labs, such as the National Renewable Energy Laboratory. Cell efficiency measures the proportion of light converted to electricity in a single solar cell at standard test conditions. Our research cells are produced using laboratory equipment and methods and are not intended to be representative of our manufacturing capability. Our module conversion efficiency has improved on average more than half a percent every year for the last ten years. We currently hold two world records for CdTe PV cell efficiency, achieving an independently certified research cell efficiency of 22.1% and a full aperture area module efficiency of 18.6%. We believe that our record cells demonstrate a potential long-term module efficiency entitlement of over 20% that is achievable using our commercial-scale manufacturing equipment.

Customers

During 2019, we sold the majority of our solar modules (not included in our systems projects) to integrators and operators of systems in the United States and France, and such third-party module sales represented approximately 48% of our total net sales. During 2019, Cypress Creek Renewables, Longroad Energy, and NextEra Energy each accounted for more than 10% of our modules business net sales.

We continue to focus on key geographic markets, particularly in areas with abundant solar resources and sizable electricity demand, and additional customer relationships to diversify our customer base. We also collaborate with providers of community solar solutions, which address the residential and small business sectors to provide a broad range of customers with access to competitively priced solar energy regardless of the suitability of their rooftops. Community solar utilizes relatively small ground-mounted installations that provide clean energy to utilities, which

then offer consumers the ability to buy into a specific community installation and benefit from the solar power generated by that resource. The demand for such offerings continues to build as states across the country are enacting community solar policies, and utilities are looking to diversify their energy generation portfolio in order to meet customer demand for affordable, clean energy. We also collaborate with providers of Community Choice Aggregation programs, which allow cities and counties to purchase power on behalf of residents and businesses to provide clean energy options at competitive prices. Our expertise in module technology and utility-scale generation, paired with community solar and/or Community Choice Aggregation, allows residential power consumers to "go solar," including those who live in apartment buildings or whose home rooftops cannot accommodate solar panels.

Competition

The solar energy and renewable energy sectors are highly competitive and continually evolving as participants in these sectors strive to distinguish themselves within their markets and compete within the larger electric power industry. We face intense competition for sales of solar modules, which has resulted in and may continue to result in reduced average selling prices and loss of market share. With respect to our modules business, our primary sources of competition are crystalline silicon solar module manufacturers. In addition, we expect to compete with future entrants into the PV solar industry and existing market participants that offer new or differentiated technological solutions. For example, many crystalline silicon cell and wafer manufacturers continue to transition from lower efficiency Back Surface Field ("BSF") multi-crystalline cells (the legacy technology against which we have generally competed in our markets) to higher efficiency Passivated Emitter Rear Contact ("PERC") mono-crystalline cells at competitive cost structures. Additionally, while conventional solar modules, including the solar modules we produce, are monofacial, meaning their ability to produce energy is a function of direct and diffuse irradiance on their front side, certain manufacturers of mono-crystalline PERC modules are pursuing the commercialization of bifacial modules that also capture diffuse irradiance on the back side of a module. We also face competition from semiconductor manufacturers and semiconductor equipment manufacturers or their customers that produce PV solar cells, solar modules, or turnkey production lines. Within the larger electric power industry, we compete with companies that currently offer or are developing other renewable energy technologies (including wind, hydroelectric, geothermal, biomass, and tidal technologies), as well as traditional energy generation sources.

Certain of our existing or future competitors may have direct or indirect access to sovereign capital, which could enable such competitors to operate at minimal or negative operating margins for sustained periods of time. Among PV solar module manufacturers, the principal methods of competition include sales price per watt, wattage (or conversion efficiency), energy yield, reliability, warranty terms, and customer payment terms. If competitors reduce module pricing to levels near or below their manufacturing costs, or are able to operate at minimal or negative operating margins for sustained periods of time, our results of operations could be adversely affected. We believe the solar industry may from time to time experience periods of structural imbalance between supply and demand (i.e., where production capacity exceeds global demand), and that such periods will put pressure on pricing, which could adversely affect our results of operations. For additional information, see Item 1A. "Risk Factors – Competition in solar markets globally and across the solar value chain is intense, and could remain that way for an extended period of time. An increased global supply of PV modules has caused and may continue to cause structural imbalances in which global PV module supply exceeds demand, which could have a material adverse effect on our business, financial condition, and results of operations."

Raw Materials

Our CdTe module manufacturing process uses approximately 30 types of raw materials and components to construct a solar module. One critical raw material in our production process is CdTe. Of the other raw materials and components, the following are also critical to our manufacturing process: front glass coated with transparent conductive oxide, other semiconductor materials, organics such as photo resist, tempered back glass, frames, packaging components such as interlayer, cord plate/cord plate cap, lead wire, and solar connectors. Before we use these materials and components in our manufacturing process, a supplier must undergo rigorous qualification procedures, and we continually evaluate new suppliers as part of our cost reduction roadmaps. When possible, we attempt to use suppliers that can provide a

raw material supply source that is near our manufacturing locations, reducing the cost and lead times for such materials. Several of our key raw materials and components are either single-sourced or sourced from a limited number of suppliers.

Solar Module Collection and Recycling

We are committed to extended producer responsibility and take into account the environmental impact of our products over their entire life cycle. As part of such efforts, we previously established the solar industry's first comprehensive module collection and recycling program. Our module recycling process is designed to maximize the recovery of materials, including the glass and encapsulated semiconductor material, for use in new modules or other products and enhances the sustainability profile of our modules. Approximately 90% of each collected First Solar module can be recycled into materials for reuse. For certain legacy customer sales contracts that were covered under this program, we agreed to pay the costs for the collection and recycling of qualifying solar modules, and the end users agreed to notify us, disassemble their solar power systems, package the solar modules for shipment, and revert ownership rights over the modules back to us at the end of the modules' service lives. We currently have recycling facilities operating at each of our manufacturing facilities in the United States, Malaysia, and Vietnam and at our former manufacturing facility location in Germany.

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

Solar Module Warranties

We provide a limited PV solar module warranty covering defects in materials and workmanship under normal use and service conditions for approximately 10 years. We also typically warrant that modules installed in accordance with agreed-upon specifications will produce at least 98% of their labeled power output rating during the first year, with the warranty coverage reducing by 0.5% every year thereafter throughout the approximate 25-year limited power output warranty period. As an alternative form of our standard limited module power output warranty, we also offer to certain customers an aggregated or system-level limited module performance warranty. This system-level limited module performance warranty is designed for utility-scale systems and provides 25-year system-level energy degradation protection. For additional information on our solar module warranty programs, refer to Item 1A. "Risk Factors – Problems with product quality or performance, including our Series 4 modules and Series 6 modules, may cause us to incur significant and/or unexpected contractual damages and/or warranty and related expenses, damage our market reputation, and prevent us from maintaining or increasing our market share."

Systems Business

Project Development

Project development activities generally include (i) selecting, securing, and maintaining the project site; (ii) obtaining the requisite interconnection and transmission studies; (iii) executing an interconnection agreement; (iv) obtaining environmental and land-use permits; and (v) entering into a PPA with an off-taker for the power to be generated by the project. The sequence of such development activities varies by international location and, in certain locations, may begin by initially bidding for PPA or off-take agreements. These activities culminate in receiving the right to construct and operate a PV solar power system.

Depending on the market opportunity or geographic location, we may acquire projects in various stages of development or acquire project companies from developers in order to complete the development process, construct a system

incorporating our modules, and sell the system to a long-term owner. We may also collaborate with local partners in connection with these project development activities. Depending on the type of project or geographic location, PPAs or feed-in-tariff ("FiT") structures define the price and terms the utility or customer will pay for power produced from the project. Depending primarily on the location, stage of development upon our acquisition of the project, and/or other site attributes, the development cycle typically ranges from one to two years but may be as long as five years. We may be required to incur significant costs for preliminary engineering, permitting, legal, and other expenses before we can determine whether a project is feasible, economically attractive, or capable of being built. If there is a delay in obtaining any required regulatory approvals, we may be forced to incur additional costs or impair our project assets, and the termination rights of the off-taker under the PPA may be triggered.

Following an evaluation of the long-term sustainable cost structure, competitiveness, and risk-adjusted returns of our U.S. project development business, we have determined it is in the best interest of our stockholders to explore options for this business line. This exploration may result in, among other possibilities, a partnership with a third party who possesses complimentary competencies or a sale of all or a portion of our U.S. project development business. This exploration of options for our U.S. project development business is not subject to any definitive timetable and there can be no assurances that this process will result in any transaction.

EPC Services

EPC services generally include (i) engineering design and related services, (ii) BoS procurement, (iii) advanced development of grid integration solutions, and (iv) construction contracting and management. Depending on the customer and market need, we may provide or subcontract with third parties to provide any combination of individual products and services within our capabilities. We conduct performance testing of a system prior to substantial completion to confirm the system meets its operational and capacity expectations noted in the EPC agreement. For systems we construct, we typically provide limited warranties for defects in engineering design, installation, and BoS part workmanship for a period of one to two years following the substantial completion of a system or a block within the system. We may also provide an energy performance test during the first or second year of a system's operation to demonstrate that the actual energy generation for the applicable year meets or exceeds the modeled energy expectation, after certain adjustments, such as irradiance, weather, module degradation, soiling, curtailment, and other conditions that may affect a system's energy output but are unrelated to quality, design, or construction.

To further enhance the operational capabilities of utility-scale systems, we may also provide energy storage solutions using advanced battery technology. Such storage solutions enable system owners to better align the delivery of energy with periods of peak demand, thereby increasing a system's overall value. Storage capabilities also allow PV solar plants to meet or exceed the peaking capabilities of fossil fuel-based plants at potentially lower costs. Our advanced plant control systems manage the operations of both the PV solar plant and its storage capabilities to ensure accurate delivery of requested power to the grid. As part of our storage solutions, we provide proprietary algorithms to design and simulate the optimal dispatch of a system depending on the customer and market needs, including site-specific weather conditions.

In September 2019, we announced our transition from an internal EPC service model in the United States to an external model, in which we expect to leverage the capabilities of third-party EPC services in providing power plant solutions to our systems segment customers. This transition is not expected to affect any projects currently under construction. The shift to an external EPC service model in the United States aligns with our typical model in international markets and is facilitated, in part, by our Series 6 module technology and its improved BoS compatibility.

O&M Services

Our typical O&M service arrangements involve the performance of standard activities associated with operating and maintaining a PV solar power system. We perform such activities pursuant to the scope of services outlined in the underlying contract. These activities are considered necessary to optimize system performance and comply with PPAs, other agreements, and regulations. Although the scope of our services varies by contract and jurisdiction, our O&M

service arrangements generally include 24/7 system monitoring, certain PPA and other agreement compliance, NERC compliance, large generator interconnection agreement compliance, energy forecasting, performance engineering analysis, regular performance reporting, turn-key maintenance services including spare parts and corrective maintenance repair, warranty management, and environmental services. As part of our O&M services, we also typically provide an effective availability guarantee, which stipulates that a system will be available to generate a certain percentage of total possible energy during a specific period after adjusting for factors outside our control as the service provider, such as weather, curtailment, outages, force majeure, and other conditions that may affect system availability.

Customers

Our systems customers consist of utilities, independent power producers, commercial and industrial companies, and other system owners, such as investors who are looking for long-term investment vehicles that are expected to generate consistent returns. Such customers may purchase completed systems, which include our PV solar modules, or any combination of development, EPC, and/or O&M services. We also seek to provide innovative power plant solutions, including grid integration and plant engineering services, to facilitate the adoption and optimize the use of our technology. During 2019, the substantial majority of our systems business sales were in the United States and Australia, and the principal customers of our systems business were EDP Renewables, ConnectGen, and Innergex Renewable Energy, who each accounted for more than 10% of our systems business net sales.

In certain markets, the emergence of utility-owned generation has increased the number of potential project buyers as such utility customers benefit from a potentially low cost of capital available through rate-basing utility investments. Given their long-term ownership profile, utility-owned generation customers typically seek to partner with diversified companies that can provide a broad spectrum of utility-scale generation solutions, including reliable PV solar technology, project development and construction, and O&M services, thereby mitigating their long-term ownership risks.

The wholesale commercial and industrial market also represents a promising opportunity given our utility-scale PV solar power system expertise. The demand for corporate renewables continues to accelerate, with corporations worldwide committing to the RE100 campaign, a collaborative, global initiative of influential businesses committed to 100% renewable electricity. We believe we also have a competitive advantage in the commercial and industrial market due to many customers' sensitivity to the experience, bankability, and financial viability of their suppliers and geographically diverse operating locations. With our strong development expertise, financial strength, and global footprint, we are well positioned to meet these needs. For example, our 150 MW_{AC} Sun Streams 2 project is expected to provide energy for certain Microsoft Corporation data centers, and our recently sold 227 MW_{AC} Muscle Shoals, 122 MW_{AC} Cove Mountain Solar 2, and 58 MW_{AC} Cove Mountain Solar 1 projects are expected to provide energy for certain Facebook, Inc. data centers through PPAs with Tennessee Valley Authority and PacifiCorp. Since our first corporate related PPA with Apple Inc., we have contracted over 800 MW_{AC} of PPAs associated with corporate customers to support their renewable energy goals.

Competition

With respect to our systems business, we face competition from other providers of renewable energy solutions, including developers of PV solar power systems and developers of other forms of renewable energy projects, such as wind, hydroelectric, geothermal, biomass, and tidal projects. We may also compete with other developers that integrate energy storage solutions with PV solar or wind projects, thereby enabling system owners to better align the delivery of energy with periods of peak demand. To the extent other solar module manufacturers become more vertically integrated, we expect to face increased competition from such companies as well. Certain current or potential future competitors may have a low cost of capital and/or access to foreign capital. The decline in module prices over the last several years has increased interest in solar energy worldwide, and there are limited barriers to entry in certain parts of the PV solar value chain, depending on the geographic market. Accordingly, competition at the system level can be intense, thereby exerting downward pressure on system-level selling prices industry-wide. See Item 1A. "Risk Factors – Competition at the system level can be intense, thereby potentially exerting downward pressure on system-level profit margins industry-wide, which could reduce our profitability and adversely affect our results of operations."

Own and Operate

From time to time, we may temporarily own and operate, or retain interests in, certain of our systems for a period of time based on strategic opportunities or market factors. The ability to do so provides certain potential benefits, including greater control over the sales process and offering a lower risk profile to project buyers. As of December 31, 2019, we owned and operated a number of systems in various geographic markets, including Chile, India, the United States, and the Asia-Pacific region. As an owner and operator of certain systems in the United States, we may be subject to the authority of the Federal Energy Regulatory Commission ("FERC"), as well as various other federal, state, and local regulatory bodies. For more information about risks related to owning and operating such systems, please see Item 1A. "Risk Factors – As an owner and operator of PV solar power systems that deliver electricity to the grid, certain of our affiliated entities may be regulated as public utilities under U.S. federal and state law, which could adversely affect the cost of doing business and limit our growth." For more information about the economics of such ownership and the impacts on our liquidity see Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations – Liquidity and Capital Resources."

Intellectual Property

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

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

Environmental, Health, and Safety Matters

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

financial condition, or results of operations. See Item 1A. "Risk Factors – Environmental obligations and liabilities could have a substantial negative impact on our business, financial condition, and results of operations."

Corporate History

We were incorporated in Delaware in February 2006 and completed our initial public offering of common stock in November 2006.

Associates

As of December 31, 2019, we had approximately 6,600 associates (our term for full and part-time employees), including approximately 5,200 in our modules business and approximately 500 associates that work directly in our systems business. The remainder of our associates are in R&D, sales and marketing, and general and administrative positions. None of our associates are currently represented by labor unions or covered by a collective bargaining agreement. As we expand domestically and internationally, we may encounter either regional laws that mandate union representation or associates who desire union representation or a collective bargaining agreement.

Available Information

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

Information about Our Executive Officers

Our executive officers and their ages and positions as of February 20, 2020 were as follows:

Name	Age	Position
Mark R. Widmar	54	Chief Executive Officer
Alexander R. Bradley	38	Chief Financial Officer
Georges Antoun	57	Chief Commercial Officer
Philip Tymen deJong	60	Chief Operations Officer
Raffi Garabedian	53	Chief Technology Officer
Paul Kaleta	64	Executive Vice President, General Counsel and Secretary
Caroline Stockdale	56	Executive Vice President, Human Resources and Communications

Mark R. Widmar was appointed Chief Executive Officer in July 2016. He joined First Solar in April 2011 as Chief Financial Officer and also served as First Solar's Chief Accounting Officer from February 2012 through June 2015. From March 2015 to June 2016, Mr. Widmar served as the Chief Financial Officer and through June 2018, served as a director on the board of the general partner of 8point3 Energy Partners LP ("8point3"), the joint yieldco formed by First Solar and SunPower Corporation in 2015 to own and operate a portfolio of selected solar generation assets. Prior to joining First Solar, Mr. Widmar served as Chief Financial Officer of GrafTech International Ltd., a leading global manufacturer of advanced carbon and graphite materials, from May 2006 through March 2011. Prior to joining GrafTech, Mr. Widmar served as Corporate Controller of NCR Inc. from 2005 to 2006, and was a Business Unit Chief Financial Officer for NCR from November 2002 to his appointment as Controller. He also served as a Division Controller at

Dell, Inc. from August 2000 to November 2002. Mr. Widmar also held various financial and managerial positions with Lucent Technologies Inc., Allied Signal, Inc., and Bristol Myers/Squibb, Inc. He began his career in 1987 as an accountant with Ernst & Young. Mr. Widmar holds a Bachelor of Science in business accounting and a Masters of Business Administration from Indiana University.

Alexander R. Bradley was appointed interim Chief Financial Officer in July 2016 and confirmed as Chief Financial Officer in October 2016. Mr. Bradley previously served as Vice President, Treasury and Project Finance for First Solar. Mr. Bradley previously served as an officer and board member of the general partner of 8point3 from June 2016 to June 2018. From June 2015 to June 2016, Mr. Bradley served as a Vice President of Operations of the general partner of 8point3. Mr. Bradley has led or supported the structuring, sale, and financing of over $10 billion and approximately 2.7 GW_{DC} of the Company's worldwide development assets, including several of the largest PV power plant projects in North America. Mr. Bradley's professional experience includes more than 10 years in investment banking, mergers and acquisitions, project finance, and business development in the United States and internationally. Prior to joining First Solar in May 2008, Mr. Bradley worked at HSBC in investment banking and leveraged finance, in London and New York, covering the energy and utilities sector. He received his Master of Arts from the University of Edinburgh, Scotland.

Georges Antoun was appointed Chief Commercial Officer in July 2016. He joined First Solar in July 2012 as Chief Operating Officer before being appointed as President, U.S. in July 2015. Mr. Antoun has over 30 years of operational and technical experience, including leadership positions at several global technology companies. Prior to joining First Solar, Mr. Antoun served as Venture Partner at Technology Crossover Ventures ("TCV"), a private equity and venture firm that he joined in July 2011. Before joining TCV, Mr. Antoun was the Head of Product Area IP & Broadband Networks for Ericsson, based in San Jose, California. Mr. Antoun joined Ericsson in 2007, when Ericsson acquired Redback Networks, a telecommunications equipment company, where Mr. Antoun served as the Senior Vice President of World Wide Sales & Operations. After the acquisition, Mr. Antoun was promoted to Chief Executive Officer of the Redback Networks subsidiary. Prior to Redback Networks, Mr. Antoun spent five years at Cisco Systems, where he served as Vice President of Worldwide Systems Engineering and Field Marketing, Vice President of Worldwide Optical Operations, and Vice President of Carrier Sales. Prior to Cisco Systems, he was the Director of Systems Engineering at Newbridge Networks, a data and voice networking company. Mr. Antoun started his career at Nynex (now Verizon Communications), where he was part of its Science and Technology Division. Mr. Antoun also served as a member of the board of directors of Ruckus Wireless, Inc. and Violin Memory, Inc., both publicly-traded companies. He earned a Bachelor of Science degree in engineering from the University of Louisiana at Lafayette and a Master's degree in information systems engineering from NYU Poly.

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

Raffi Garabedian has been the Chief Technology Officer of First Solar since May 2012 and leads the Company's technology, PV module and power plant system products and roadmaps. Mr. Garabedian joined First Solar in June 2008 as Director of Disruptive Technologies. Prior to First Solar, Mr. Garabedian spent over 15 years in the MEMS (micro-electro-mechanical systems) industry, developing new products ranging from automotive engine control sensors to fiber optic telecommunications switching systems. He was the founding CEO of Touchdown Technologies, Inc., which was acquired by Verigy, as well as Micromachines Inc., which was acquired by Kavlico. Mr. Garabedian is named on approximately 28 issued U.S. patents. Mr. Garabedian serves as a director on the boards of Covelant Metrology

and Heliotrope Technologies. Mr. Garabedian earned a Bachelor of Science degree in electrical engineering from Rensselaer Polytechnic Institute and a Master of Science degree in electrical engineering with a focus on semiconductor and microsystems technology from the University of California Davis.

Paul Kaleta joined First Solar in March 2014 as Executive Vice President & General Counsel. In February 2017, Mr. Kaleta was appointed as Corporate Secretary. Prior to joining First Solar, Mr. Kaleta was Executive Vice President, General Counsel, Shared Services & Secretary, and Chief Compliance Officer for NV Energy, Inc., which was acquired by Berkshire Hathaway's Energy Group in December 2013. Before that, he was Vice President and General Counsel for Koch Industries, Inc., one of the world's largest privately held companies with diverse businesses worldwide, including refining, petrochemicals, and commodity trading, among others. He also served in a number of legal and other leadership roles for Koch companies. Before joining Koch, he was Vice President and General Counsel of Niagara Mohawk Power Corporation (now part of National Grid). In private practice, Mr. Kaleta was an equity partner in the Washington D.C. law firm Swidler Berlin LLP and an associate in the Washington D.C. office of Skadden, Arps, Slate, Meagher & Flom LLP. He also served as a federal judicial clerk. Mr. Kaleta is the founding chair of the Southern Nevada Chapter of the "I Have a Dream Foundation" (now "Core Academy-powered by The Rogers Foundation"), a former member of the client advisory council of Lex Mundi, and has taught both energy law and business ethics and leadership, as an adjunct professor, among other industry professional and community activities. Mr. Kaleta holds a juris doctor degree from Georgetown University Law Center and a Bachelor of Arts degree in philosophy and English from Hamilton College.

Caroline Stockdale joined First Solar in October 2019 as Executive Vice President, Human Resources and Communications. Prior to joining First Solar, she served as the Chief Executive Officer for First Perform, a provider of human resources services for a variety of customers, from Fortune 100 companies to cyber start-ups. Previously, she served as Chief Human Resources Officer for Medtronic from 2010 to 2013 and Warner Music Group from 2005 to 2009. Before joining Warner Music Group, she served as the senior human resources leader in global divisions of American Express from 2002 to 2005 and General Electric from 1997 to 2002. Ms. Stockdale is a member of the Forbes Human Resources Council. Ms. Stockdale holds a Bachelor of Arts in political theories and institutions, philosophy, from the University of Sheffield.

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

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

Risks Related to Our Markets and Customers

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

In the aggregate, we believe manufacturers of solar cells and modules have significant installed production capacity, relative to global demand, and the ability for additional capacity expansion. For example, we estimate that in 2019 over 20 GW_{DC} of capacity was added by solar module manufacturers, primarily but not exclusively in Asia. We believe the solar industry may from time to time experience periods of structural imbalance between supply and demand (i.e., where production capacity exceeds global demand), and that such periods will continue to put pressure on pricing. During the past several years, industry average selling prices per watt have declined in many markets, at times significantly, both at the module and system levels, as competitors have reduced prices to sell inventories worldwide. There may be additional pressure on global demand and average selling prices in the future resulting from fluctuating demand in certain major solar markets, such as China. If our competitors reduce module pricing to levels near or below their manufacturing costs, or are able to operate at minimal or negative operating margins for sustained periods of time, or if demand for PV modules does not grow sufficiently to justify the current production supply, our business, financial condition, and results of operations could be adversely affected.

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

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

- cost-effectiveness of the electricity generated by PV solar power systems compared to conventional energy sources, such as natural gas (which fuel source may be subject to significant price fluctuations from time to time), and other renewable energy sources, such as wind, geothermal, and hydroelectric;

- changes in tax, trade remedies, and other public policy, as well as changes in economic, market, and other conditions that affect the price of, and demand for, conventional energy resources, non-solar renewable energy resources (e.g., wind and hydroelectric), and energy efficiency programs and products, including increases or decreases in the prices of natural gas, coal, oil, and other fossil fuels and in the prices of competing renewable resources;

- the extent of competition, barriers to entry, and overall conditions and timing related to the development of solar in new and emerging market segments such as commercial and industrial customers, community solar, community choice aggregators, and other customer segments;

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

- performance, reliability, and availability of energy generated by PV solar power systems compared to conventional and other non-solar renewable energy sources and products, particularly conventional energy generation capable of providing 24-hour, non-intermittent baseload power;

- the development, functionality, scale, cost, and timing of energy storage solutions; and

- changes in the amount and priorities of capital expenditures by end users of solar modules and systems (e.g., utilities), which capital expenditures tend to decrease when the economy slows or when interest rates increase, thereby resulting in redirection away from solar generation to development of competing forms of electric generation and to distribution (e.g., smart grid), transmission, and energy efficiency measures.

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

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

In addition, policies of the U.S. presidential administration may create regulatory uncertainty in the renewable energy industry, including the solar industry, and our business, financial condition, and results of operations could be adversely affected. Members of the U.S. presidential administration, including representatives of the U.S. Department of Energy, have made public statements that indicate that the administration may not be supportive of various clean energy programs and initiatives designed to curtail climate change. For example, in June 2017, the U.S. President announced that the United States would withdraw from participation in the 2015 Paris Agreement on climate change mitigation. In addition, the administration has indicated that it may be supportive of overturning or modifying policies of or regulations enacted by the prior administration that placed limitations on gas and coal electricity generation, mining, and/or exploration. Additionally, in October 2017, the United States Environmental Protection Agency (“U.S. EPA”) issued a Notice of Proposed Rulemaking, proposing to repeal the previous U.S. presidential administration’s Clean Power Plan (“CPP”), which established standards to limit carbon dioxide emissions from existing power generation facilities. In June 2019, the U.S. EPA issued the final Affordable Clean Energy (“ACE”) rule and repealed the CPP. Under the ACE rule,

emissions from electric utility generation facilities would be regulated only through the use of various "inside the fence" or onsite efficiency improvements and emission control technologies. In contrast, the CPP allowed facility owners to reduce emissions with "outside the fence" measures, including those associated with renewable energy projects. While the ACE rule is currently subject to legal challenges and may be subject to future challenges, the ultimate resolution of such challenges, and the ultimate impact of the ACE rule, is uncertain. As a result of the new ACE rule and other policies or actions of the current U.S. administration and/or the U.S. Congress, we may be subject to significant risks, including the following:

- a reduction or removal of clean energy programs and initiatives and the incentives they provide may diminish the market for future solar energy off-take agreements, slow the retirement of aging fossil fuel plants, including the retirements of coal generation plants, and reduce the ability for solar project developers to compete for future solar energy off-take agreements, which may reduce incentives for such parties to develop solar projects and purchase PV solar modules;

- any limitations on the value or availability to potential investors of tax incentives that benefit solar energy projects such as the ITC and accelerated depreciation deductions could result in such investors generating reduced revenues and economic returns and facing a reduction in the availability of affordable financing, thereby reducing demand for PV solar modules. The ITC is a U.S. federal incentive that provides an income tax credit to the owner of the project after the project is placed in service. Among other requirements, such credits require projects to have commenced construction by a certain date, which may be achieved by certain qualifying procurement activities. Accordingly, projects that commenced construction in 2019 were eligible for a 30% ITC. The credit will step down to 26% for projects that commence construction in 2020, 22% for projects that commence construction in 2021, and 10% for projects that commence construction thereafter. Under the Modified Accelerated Cost-Recovery System, owners of equipment used in a solar project may claim all of their depreciation deductions with respect to such equipment over five years, even though the useful life of such equipment is generally greater than five years. In addition, in December 2017, the U.S. government enacted comprehensive tax reform legislation commonly referred to as the Tax Cuts and Jobs Act (the "Tax Act"). Under the Tax Act, qualified property placed in service after September 22, 2017 and before January 1, 2023 is generally eligible for 100% expensing, and such property placed in service after December 31, 2022 and before January 1, 2027 is generally eligible for expensing at lower percentages. However, the Tax Act also reduced the U.S. corporate income tax rate to 21% effective January 1, 2018, which could diminish the capacity of potential investors to benefit from incentives such as the ITC and reduce the value of accelerated depreciation deductions and expensing, thereby reducing the relative attractiveness of solar projects as an investment; and

- any effort to overturn federal and state laws, regulations, or policies that are supportive of solar energy generation or that remove costs or other limitations on other types of electricity generation that compete with solar energy projects could negatively impact our ability to compete with traditional forms of electricity generation and materially and adversely affect our business.

Application of U.S. trade laws, or trade laws of other countries, may also impact, either directly or indirectly, our operating results. For example, in January 2018, following a petition filed by a U.S.-based manufacturer of solar cells under Sections 201 and 202 of the Trade Act of 1974 for global safeguard relief with the U.S. International Trade Commission (the "USITC"), requesting, among other things, the imposition of certain tariffs on crystalline silicon solar cells imported into the United States and the establishment of a minimum price per watt on imported crystalline silicon solar modules, the U.S. President proclaimed tariffs on imported crystalline silicon modules, and a tariff-rate quota on imported crystalline silicon cells, over a four-year period, with the tariff on modules, and the tariff on cells above the first 2.5 GW_{DC} of imports, starting at 30% for the February 2018 to February 2019 period and declining by five percentage points in each subsequent 12-month period. Thin film solar cell products, such as our CdTe technology, are expressly excluded from the tariffs. The Office of the United States Trade Representative (the "USTR") has also granted certain requests that particular types of solar products be excluded from the tariffs. Among these was an exclusion for bifacial solar modules that was issued on June 13, 2019. In a notice published on October 9, 2019, the USTR announced that

it will withdraw the exclusion for bifacial solar modules, effective October 28, 2019. However, on December 5, 2019, the United States Court of International Trade overturned the announcement by issuing a preliminary injunction ordering the exclusion of bifacial solar modules from the tariffs. On January 27, 2020, the USTR announced a public comment process regarding the possible retention or withdrawal of the exclusion for bifacial solar modules, but such process has been challenged at the United States Court of International Trade. In addition, the USITC has reviewed developments regarding the relevant domestic industry (including its efforts to adjust to import competition) and provided a report to the U.S. President in February 2020. The USITC is also reviewing the probable effects of increasing the tariff-rate quota for solar cells from 2.5 GW_{DC} to 4, 5, or 6 GW_{DC}, and is scheduled to report its advice to the USTR in March 2020. Such reports could serve as a basis for the U.S. President to reduce, modify, or terminate the safeguard tariffs.

The United States has also imposed import tariffs in connection with other proceedings during 2018 and 2019. In March 2018, the U.S. President proclaimed tariffs on certain imported aluminum and steel articles, generally at rates of 10% and 25%, respectively, under Section 232 of the Trade Expansion Act of 1962. Currently, all countries except Argentina, Australia, Canada, and Mexico are covered by the aluminum tariff, and all countries except Argentina, Australia, Brazil, Canada, Mexico, and South Korea are covered by the steel tariff. In addition, in May 2018, the U.S. President proclaimed absolute quotas for the import of aluminum articles from Argentina and the import of steel articles from Argentina, Brazil, and South Korea. In January 2020, the U.S. President announced the expansion of tariffs under Section 232 to cover certain derivative steel and aluminum articles. Separately, in a series of actions during 2018 and 2019 that followed an investigation under Section 301 of the Trade Act of 1974, the United States imposed tariffs on various articles imported from China at a rate of 25%, including crystalline silicon solar cells and modules and various other articles. In August 2019, the U.S. President announced that the Section 301 tariff on various products, including crystalline silicon solar cells and modules, would increase to 30%, but such increase was later postponed in connection with U.S.-China negotiations. In December 2019, the United States and China announced a “Phase One” economic and trade agreement, whereby the U.S. Section 301 tariffs on various products, including crystalline silicon solar cells and modules, would remain at 25%, while Section 301 tariffs on certain other products would be lowered from 15% to 7.5%.

Internationally, in July 2018, the Indian government imposed a safeguard duty on solar cells and modules imported from various countries, including member countries of the Organisation for Economic Co-operation and Development (“OECD”), China, and Malaysia, for a two-year period, starting at 25% through July 2019 and declining by five percentage points in each subsequent six-month period. In addition, in March 2019, the Indian government issued technical guidelines related to the enlistment of approved models and manufacturers of PV solar modules. Pursuant to the regulations, after March 2020, all projects owned by the Indian government or from which energy would be supplied to the government would be required to procure eligible components from these enlisted manufacturers. The enlistment procedures have certain distinguishing criteria depending on whether a manufacturer is located inside or outside of India, which may restrict our ability to access the Indian market. Such tariffs and policies, or any other U.S. or global trade remedies or other trade barriers, may directly or indirectly affect U.S. or global markets for solar energy and our business, financial condition, and results of operations.

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

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

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

- difficulty in accurately prioritizing geographic markets that we can most effectively and profitably serve with our PV solar offerings, including miscalculations in overestimating or underestimating addressable market demand;
- difficulty in competing against companies who may have greater financial resources and/or a more effective or established localized business presence and/or an ability to operate with minimal or negative operating margins for sustained periods of time;
- difficulty in competing successfully with emerging technologies, such as bifacial modules and n-type mono-crystalline wafers and cells;
- adverse public policies in countries we operate in and/or are pursuing, including local content requirements, the imposition of trade remedies, or capital investment requirements;
- business climates, such as that in China, that may have the effect of putting foreign companies at a disadvantage relative to domestic companies;
- unstable economic, social, and/or operating environments in foreign jurisdictions, including social unrest, currency, inflation, and interest rate uncertainties;
- the possibility of applying an ineffective commercial approach to targeted markets, including product offerings that may not meet market needs;
- difficulty in generating sufficient sales volumes at economically sustainable profitability levels;
- difficulty in timely identifying, attracting, training, and retaining qualified sales, technical, and other personnel in geographies targeted for expansion;
- difficulty in maintaining proper controls and procedures as we expand our business operations in terms of geographical reach, including transitioning certain business functions to low-cost geographies, with any material control failure potentially leading to reputational damage and loss of confidence in our financial reporting;
- difficulty in competing successfully for market share in overall solar markets as a result of the success of companies participating in the global rooftop PV solar market, which is a segment in which we do not have significant historical experience;
- difficulty in establishing and implementing a commercial and operational approach adequate to address the specific needs of the markets we are pursuing;
- difficulty in identifying effective local partners and developing any necessary partnerships with local businesses on commercially acceptable terms; and
- difficulty in balancing market demand and manufacturing production in an efficient and timely manner, potentially causing our manufacturing capacity to be constrained in some future periods or over-supplied in others.

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

The loss of any of our large customers, or their inability to perform under their contracts with us, could significantly reduce our net sales and negatively impact our results of operations.

Our customers include integrators and operators of systems, utilities, independent power producers, commercial and industrial companies, and other system owners, who may experience intense competition at the system level, thereby constraining the ability for such customers to sustain meaningful and consistent profitability. The loss of any of our large customers, their inability to perform under their contracts, or their default in payment could significantly reduce our net sales and/or adversely impact our operating results. While our contracts with customers typically have certain firm purchase commitments and may include provisions for the payment of amounts to us in certain events of contract termination, these contracts may be subject to amendments made by us or requested by our customers. These amendments may reduce the volume of modules to be sold under the contract, adjust delivery schedules, or otherwise decrease the expected revenue under these contracts. Although we believe that we can mitigate this risk, in part, by reallocating modules to other customers if the need arises, we may be unable, in whole or in part, to do so on similar terms or at all. We may also mitigate this risk by requiring some form of payment security from our customers, such as parent guarantees, bank guarantees, surety bonds, or commercial letters of credit. However, in the event the providers of such payment security fail to perform their obligations, our operating results could be adversely impacted.

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

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

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

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

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

Risks Related to our Operations, Manufacturing, and Technology

Our future success depends on our ability to effectively balance manufacturing production with market demand, convert existing production facilities to support new product lines, decrease our manufacturing cost per watt, and, when necessary, continue to build new manufacturing plants over time in response to market demand, all of which are subject to risks and uncertainties.

Our future success depends on our ability to effectively balance manufacturing production with market demand, convert existing production facilities to support new product lines, decrease our manufacturing cost per watt, and increase our manufacturing capacity in a cost-effective and efficient manner. If we cannot do so, we may be unable to decrease our manufacturing cost per watt, maintain our competitive position, sustain profitability, expand our business, or create long-term shareholder value. Our ability to decrease our manufacturing cost per watt, expand production capacity, or convert existing production facilities to support new product lines is subject to significant risks and uncertainties, including the following:

- failure to reduce manufacturing material, labor, or overhead costs;
- an inability to increase production throughput or the average power output per module;
- delays and cost overruns as a result of a number of factors, many of which may be beyond our control, such as our inability to secure successful contracts with equipment vendors;
- our custom-built equipment taking longer and costing more to manufacture than expected and not operating as designed;
- delays or denial of required approvals by relevant government authorities;
- an inability to hire qualified staff;
- failure to execute our expansion or conversion plans effectively;
- difficulty in balancing market demand and manufacturing production in an efficient and timely manner, potentially causing our manufacturing capacity to be constrained in some future periods or over-supplied in others; and
- incurring manufacturing asset write-downs, write-offs, and other charges and costs, which may be significant, during those periods in which we idle, slow down, shut down, convert, or otherwise adjust our manufacturing capacity.

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

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

Even if demand for solar modules continues to grow, the rapid manufacturing capacity expansion undertaken by many module manufacturers, particularly manufacturers of crystalline silicon cells and modules, has created and may continue to cause periods of structural imbalance in which supply exceeds demand. See the Risk Factor entitled "Competition in solar markets globally and across the solar value chain is intense, and could remain that way for an extended period of time. An increased global supply of PV modules has caused and may continue to cause structural imbalances in which global PV module supply exceeds demand, which could have a material adverse effect on our business, financial condition, and results of operations," for additional information. In addition, we believe any significant decrease in the cost of silicon feedstock or polysilicon would reduce the manufacturing cost of crystalline silicon modules and lead to further pricing pressure for solar modules and potentially an oversupply of solar modules. We also believe many crystalline silicon cell and wafer manufacturers have substantially transitioned from lower efficiency BSF multi-crystalline cells (the legacy technology against which we have generally competed in our markets) to higher efficiency PERC mono-crystalline cells at competitive cost structures. As a result, we expect that in the near future, our primary competition will be mono-crystalline PERC based modules with higher conversion efficiencies. Additionally, while conventional solar modules, including the solar modules we produce, are monofacial, meaning their ability to produce energy is a function of direct and diffuse irradiance on their front side, certain manufacturers of mono-crystalline PERC solar modules are promoting bifacial modules that also capture diffuse irradiance on the back side of a module. Such technology can improve the overall energy production of a module relative to nameplate front-side efficiency when applied in certain applications and BoS configurations, which could potentially lower the overall levelized cost of electricity ("LCOE"), meaning the net present value of a system's total life cycle costs divided by the quantity of energy that is expected to be produced over the system's life, of a system when compared to systems using conventional solar modules, including the modules we produce. Additionally, we believe that our competitors are evaluating the possibility of transitioning from p-type to n-type mono-crystalline wafers and cells. If successful, such transition would further increase the efficiency and energy yield of their product. Finally, many of our competitors are promoting modules with larger overall area based on the use of larger silicon wafers. While the transition to such larger wafers would increase nameplate wattage, we believe the associated production cost would not improve significantly.

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

Problems with product quality or performance, including our Series 4 modules and Series 6 modules, may cause us to incur significant and/or unexpected contractual damages and/or warranty and related expenses, damage our market reputation, and prevent us from maintaining or increasing our market share.

We perform a variety of module quality and life tests under different conditions upon which we base our assessments of future module performance over the duration of the warranty. However, if our thin film solar modules, including our Series 4 modules and Series 6 modules, perform below expectations, we could experience significant warranty and related expenses, damage to our market reputation, and erosion of our market share. With respect to our modules, we provide a limited warranty covering defects in materials and workmanship under normal use and service conditions for approximately 10 years. We also typically warrant that modules installed in accordance with agreed-upon specifications will produce at least 98% of their labeled power output rating during the first year, with the warranty coverage reducing by 0.5% every year thereafter throughout the approximate 25-year limited power output warranty period. As an alternative form of our standard limited module power output warranty, we also offer an aggregated or system-level limited module performance warranty. This system-level limited module performance warranty is designed for utility-scale systems and provides 25-year system-level energy degradation protection. This warranty represents a practical expedient to address the challenge of identifying, from the potential millions of modules installed in a utility-scale system, individual modules that may be performing below warranty thresholds by focusing on the aggregate energy generated by the system rather than the power output of individual modules. The system-level limited module performance warranty is typically calculated as a percentage of a system's expected energy production, adjusted for certain actual site conditions, with the warranted level of performance declining each year in a linear fashion, but never falling below 80% during the term of the warranty. As a result of these warranty programs, we bear the risk of product warranty claims long after we have sold our solar modules and recognized net sales.

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

Although our module performance warranties extend for 25 years, our oldest solar modules manufactured during the qualification of our pilot production line have only been in use since 2001. Accordingly, our warranties are based on a variety of quality and life tests that enable predictions of durability and future performance. These predictions, however, could prove to be materially different from the actual performance during the warranty period, causing us to incur substantial expense to repair or replace defective solar modules or provide financial remuneration in the future. For example, our solar modules, including our Series 4 modules and Series 6 modules, could suffer various failure modes, including breakage, delamination, corrosion, or performance degradation in excess of expectations, and our manufacturing operations or supply chain could be subject to materials or process variations that could cause affected modules to fail or underperform compared to our expectations. These risks could be amplified as we implement design and process changes in connection with our efforts to improve our products and accelerate module wattage as part of our long-term strategic plans and as we transition to Series 6 module manufacturing. In addition, if we increase the number of installations in extreme climates, we may experience increased failure rates due to deployment into such field conditions. Any widespread product failures may damage our market reputation, cause our net sales to decline, require us to repair or replace the defective modules or provide financial remuneration, and result in us taking voluntary remedial measures beyond those required by our standard warranty terms to enhance customer satisfaction, which could have a material adverse effect on our operating results.

In resolving claims under both the limited defect and power output warranties, we typically have the option of either repairing or replacing the covered modules or, under the limited power output warranty, providing additional modules to remedy the power shortfall or making certain cash payments; however, historical versions of our module warranty did not provide a refund remedy. Consequently, we may be obligated to repair or replace the covered modules under such historical programs. As our manufacturing process may change from time-to-time in accordance with our technology roadmap, we may elect to stop production of older versions of our modules that would constitute compatible

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

For PV solar power systems constructed for customers, we typically provide limited warranties for defects in engineering design, installation, and BoS part workmanship for a period of one to two years following the substantial completion of a system or a block within the system. In resolving claims under such BoS warranties, we have the option of remedying the defect through repair or replacement. As with our modules, these warranties are based on a variety of quality and life tests that enable predictions of durability and future performance. Any failures in BoS equipment or system construction beyond our expectations may also adversely impact our reputation, financial position, operating results, and cash flows.

In addition, our contracts with customers, including contracts for the sale of Series 6 modules, may include provisions with particular product specifications, minimum wattage requirements, and specified delivery schedules. These contracts may be terminated, or we may incur significant liquidated damages or other damages, if we fail to perform our contractual obligations. In addition, our costs to perform under these contracts may exceed our estimates, which could adversely impact our profitability. We have only recently commenced commercial production of our Series 6 modules and have limited experience satisfying our obligations under the related sales arrangements. Any failures to comply with our contracts for the sale of our modules, including our Series 6 modules, could adversely impact our reputation, financial position, operating results, and cash flows.

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

We need to continue to invest significant financial resources in R&D to continue to improve our module conversion efficiencies, lower the LCOE of our PV solar power systems, and otherwise keep pace with technological advances in the solar industry. However, R&D activities are inherently uncertain, and we could encounter practical difficulties in commercializing our research results. We seek to continuously improve our products and processes, including, for example, certain planned improvements to our Series 6 module manufacturing capabilities, and the resulting changes carry potential risks in the form of delays, performance, additional costs, or other unintended contingencies. In addition, our significant expenditures for R&D may not produce corresponding benefits. Other companies are developing a variety of competing PV technologies, including advanced multi-crystalline silicon cells, PERC or advanced p-type crystalline silicon cells, high-efficiency n-type crystalline silicon cells, bifacial solar modules, copper indium gallium diselenide thin films, amorphous silicon thin films, and new emerging technologies such as hybrid perovskites, which could produce solar modules or systems that prove more cost-effective or have better performance than our solar modules or systems.

In addition, other companies could potentially develop a highly reliable renewable energy system that mitigates the intermittent power generation drawback of many renewable energy systems, or offer other value-added improvements from the perspective of utilities and other system owners, in which case such companies could compete with us even if the LCOE associated with such new systems is higher than that of our systems. As a result, our solar modules or systems may be negatively differentiated or rendered obsolete by the technological advances of our competitors, which would reduce our net sales, profitability, and/or market share. In addition, we often forward price our products and services in anticipation of future cost reductions and technology improvements, and thus, an inability to further refine our technology and execute our module technology and cost reduction roadmaps could adversely affect our operating results.

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

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

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

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

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

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

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

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

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

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

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

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

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

If we are unable to systematically replicate our production lines over time and achieve operating metrics similar to our existing production lines, our manufacturing capacity could be substantially constrained, our manufacturing costs per watt could increase, and our growth could be limited. Such factors may result in lower net sales and lower net income than we anticipate. For instance, future production lines could produce solar modules that have lower conversion

efficiencies, higher failure rates, and/or higher rates of degradation than solar modules from our existing production lines, and we could be unable to determine the cause of the lower operating metrics or develop and implement solutions to improve performance.

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

We have significant manufacturing, development, construction, sales, and marketing operations both within and outside the United States and expect to continue to expand our operations worldwide. As a result, we are subject to the legal, political, social, tax, and regulatory requirements and economic conditions of many jurisdictions.

Risks inherent to international operations include, but are not limited to, the following:

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

- difficulty of, and costs relating to, compliance with the different commercial and legal requirements of the overseas countries in which we offer and sell our solar modules.

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

Risks Related to Our Systems Business

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

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

- obtaining financeable land rights, including land rights for the project site, transmission lines, and environmental mitigation;
- entering into financeable arrangements for the purchase of the electrical output, capacity, ancillary services, and renewable energy attributes generated by the project;
- receipt from governmental agencies of required environmental, land-use, and construction and operation permits and approvals;
- receipt of tribal government approvals for projects on tribal land;
- receipt of governmental approvals related to the presence of any protected or endangered species or habitats, migratory birds, wetlands or other jurisdictional water resources, and/or cultural resources;
- negotiation of development agreements, public benefit agreements, and other agreements to compensate local governments for project impacts;
- negotiation of state and local tax abatement and incentive agreements;
- receipt of rights to interconnect the project to the electric grid or to transmit energy;
- negotiation of satisfactory EPC agreements;
- securing necessary rights of way for access and transmission lines;
- securing necessary water rights for project construction and operation;
- securing appropriate title coverage, including coverage for mineral rights, mechanics' liens, etc.;
- obtaining financing, including debt, equity, and funds associated with the monetization of tax credits and other tax benefits;

- payment of PPA, interconnection, and other deposits (some of which are non-refundable);
- providing required payment and performance security for the development of the project, such as through the provision of letters of credit; and
- timely implementation and satisfactory completion of construction.

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

- delays in obtaining and maintaining required governmental permits and approvals, including appeals of approvals obtained;
- potential permit and litigation challenges from project stakeholders, including local residents, environmental organizations, labor organizations, tribes, and others who may oppose the project;
- in connection with any such permit and litigation challenges, grants of injunctive relief to stop development and/or construction of a project;
- discovery of unknown impacts to protected or endangered species or habitats, migratory birds, wetlands or other jurisdictional water resources, and/or cultural resources at project sites;
- discovery of unknown title defects;
- discovery of unknown environmental conditions;
- unforeseen engineering problems;
- construction delays and contractor performance shortfalls;
- work stoppages;
- cost over-runs;
- labor, equipment, and material supply shortages, failures, or disruptions;
- cost or schedule impacts arising from changes in federal, state, or local land-use or regulatory policies;
- changes in electric utility procurement practices;
- risks arising from potential transmission grid congestion, limited transmission capacity, and grid reliability constraints;
- project delays that could adversely impact our ability to maintain interconnection rights;
- additional complexities when conducting project development or construction activities in foreign jurisdictions (either on a stand-alone basis or in collaboration with local business partners), including operating in accordance with the U.S. Foreign Corrupt Practices Act (the “FCPA”) and applicable local laws and customs;
- unfavorable tax treatment or adverse changes to tax policy;
- adverse weather conditions;

- water shortages;
- adverse environmental and geological conditions;
- force majeure and other events out of our control;
- climate change; and
- change in law risks.

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

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

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

Many of our proposed projects are located on or require access through public lands administered by federal and state agencies pursuant to competitive public leasing and right-of-way procedures and processes. Our projects may also be located on tribal land pursuant to land agreements that must be approved by tribal governments and federal agencies. The authorization for the use, construction, and operation of systems and associated transmission facilities on federal, state, tribal, and private lands will also require the assessment and evaluation of mineral rights, private rights-of-way, and other easements; environmental, agricultural, cultural, recreational, and aesthetic impacts; and the likely mitigation of adverse impacts to these and other resources and uses. The inability to obtain the required permits and other federal, state, local, and tribal approvals, and any excessive delays in obtaining such permits and approvals due, for example, to litigation or third-party appeals, could potentially prevent us from successfully constructing and operating such systems in a timely manner and could result in the potential forfeiture of any deposit we have made with respect to a given project. Moreover, project approvals subject to project modifications and conditions, including mitigation requirements and costs, could affect the financial success of a given project. Changing regulatory requirements and the discovery of unknown site conditions could also affect the financial success of a given project.

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

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

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

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

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

Following an evaluation of the long-term sustainable cost structure, competitiveness, and risk-adjusted returns of our U.S. project development business, we have determined it is in the best interest of our stockholders to explore options for this business line. See Item 1. "Business – Business Segments – Systems Business – Project Development" for additional information.

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

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

to generate returns anticipated to be demanded in the project sale market, our business, financial condition, and results of operations could be adversely affected.

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

Even if we are able to obtain PPAs favorable to us, the ability of our off-take counterparties to fulfill their contractual obligations to us depends, in part, on their creditworthiness. These counterparties, such as our investor-owned utility counterparties in the state of California, which may have liability for damages associated with California's recent wildfires, could suffer a deterioration of their creditworthiness or become, and in one case has become, subject to bankruptcy, insolvency, or liquidation proceedings or otherwise. For example, in January 2019, PG&E Corporation and Pacific Gas and Electric Company filed voluntary petitions for relief under chapter 11 of title 11 of the United States Code in the U.S. Bankruptcy Court for the Northern District of California. If one or more of our counterparties becomes subject to bankruptcy, insolvency, or liquidation proceedings, or if the creditworthiness of any counterparty deteriorates, we could experience an underpayment or nonpayment under PPA agreements and our ability to attract debt or equity financing for our projects could be impaired.

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

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

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

The construction of large utility-scale solar power projects in many cases requires project financing, including non-recourse project specific debt financing in the bank loan market and institutional debt capital markets. Uncertainties exist as to whether our planned projects will be able to access the debt markets in a magnitude sufficient to finance their construction. If we, or purchasers of our projects, are unable to arrange such financing or if it is only available on unfavorable terms, we may be unable to fully execute our systems business plans. In addition, we generally expect to sell interests in our projects by raising project equity capital from tax-oriented, strategic industry, and other equity investors. Such equity sources may not be available or may only be available in insufficient amounts or on unfavorable terms, in which case our ability to sell interests in our projects may be delayed or limited, and our business, financial

condition, and results of operations may be adversely affected. Uncertainty in or adverse changes to tax policy or tax law, including the amount of ITC or accelerated depreciation, and any limitations on the value or availability to potential investors of tax incentives that benefit solar energy projects such as the ITC and accelerated depreciation deductions, as well as the reduction of the U.S. corporate income tax rate to 21% under the Tax Act (which could reduce the value of these tax related incentives) may reduce project values or negatively affect our ability to timely secure equity investment for our projects.

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

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

Solar power project development cycles, which span the time between the identification of a site location and the construction of a system, vary substantially and can take years to mature. As a result of these long project development cycles, we may need to make significant up-front investments of resources (including, for example, payments for land rights, large transmission and PPA deposits, or other payments, which may be non-refundable) in advance of the signing of EPC contracts, commencing construction, receiving cash proceeds, or recognizing any revenue. Our potential inability to enter into sales contracts with customers on favorable terms after making such upfront investments could cause us to forfeit certain nonrefundable payments or otherwise adversely affect our business and results of operations. Furthermore, we may become constrained in our ability to simultaneously fund our other business operations and these systems investments through our long project development cycles.

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

Inaccurate estimates of costs under fixed-price EPC agreements in which we are acting as the general contractor for our customers in connection with the construction and installation of their PV solar power systems could adversely affect our business and results of operations.

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

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

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

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

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

Risks Related to Regulations

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

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

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

We could be adversely affected by any violations of the FCPA, the U.K. Bribery Act, and other foreign anti-bribery laws.

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

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

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

Our solar modules contain CdTe and other semiconductor materials. Elemental cadmium and certain of its compounds are regulated as hazardous materials due to the adverse health effects that may arise from human exposure. Based on existing research, the risks of exposure to CdTe are not believed to be as serious as those relating to exposure to elemental cadmium. In our manufacturing operations, we maintain engineering controls to minimize our associates' exposure to cadmium or cadmium compounds and require our associates who handle cadmium compounds to follow certain safety

procedures, including the use of personal protective equipment such as respirators, chemical goggles, and protective clothing. Relevant studies and third-party peer reviews of our technology have concluded that the risk of exposure to cadmium or cadmium compounds from our end-products is negligible. In addition, the risk of exposure is further minimized by the encapsulated nature of these materials in our products, the physical properties of cadmium compounds used in our products, and the recycling or responsible disposal of our modules. While we believe that these factors and procedures are sufficient to protect our associates, end users, and the general public from adverse health effects that may arise from cadmium exposure, we cannot ensure that human or environmental exposure to cadmium or cadmium compounds used in our products will not occur. Any such exposure could result in future third-party claims against us, damage to our reputation, and heightened regulatory scrutiny, which could limit or impair our ability to sell and distribute our products. The occurrence of future events such as these could have a material adverse effect on our business, financial condition, and results of operations.

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

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

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

Public utilities under the FPA are required to obtain FERC acceptance of their rate schedules for wholesale sales of electricity and to comply with various regulations. The FERC may grant our affiliated entities the authority to sell electricity at market-based rates and may also grant them certain regulatory waivers, such as waivers from compliance with FERC's accounting regulations. These FERC orders reserve the right to revoke or revise market-based sales authority if the FERC subsequently determines that our affiliated entities can exercise market power in the sale of generation products, the provision of transmission services, or if it finds that any of the entities can create barriers to entry by competitors. In addition, if the entities fail to comply with certain reporting obligations, the FERC may revoke their power sales tariffs. Finally, if the entities were deemed to have engaged in manipulative or deceptive practices concerning their power sales transactions, they would be subject to potential fines, disgorgement of profits, and/or suspension or revocation of their market-based rate authority. If our affiliated entities were to lose their market-based rate authority, such companies would be required to obtain the FERC's acceptance of a cost-of-service rate schedule and could become subject to the accounting, record-keeping, and reporting requirements that are imposed on utilities with cost-based rate schedules, which would impose cost and compliance burdens on us and have an adverse effect on our results of operations. In addition to the risks described above, we may be subject to additional regulatory regimes at state or foreign levels to the extent we own and operate PV solar power systems in such jurisdictions.

Other Risks

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

From time to time, we are subject to legal claims, with and without merit, that may be costly and which may divert the attention of our management and our resources in general. In addition, our projects may be subject to litigation or other adverse proceedings that may adversely impact our ability to proceed with construction or sell a given project. The results of complex legal proceedings are difficult to predict. Moreover, many of the complaints filed against us do not specify the amount of damages that plaintiffs seek, and we therefore are unable to estimate the possible range of damages that might be incurred should these lawsuits be resolved against us. Even if we are able to estimate losses related to these actions, the ultimate amount of loss may be materially higher than our estimates. Certain of these lawsuits assert types of claims that, if resolved against us, could give rise to substantial damages, and an unfavorable outcome or settlement of one or more of these lawsuits, or any future lawsuits, may result in a significant monetary judgment or award against us or a significant monetary payment by us, and could have a material adverse effect on our business, financial condition, or results of operations. Even if these lawsuits, or any future lawsuits, are not resolved against us, the costs of defending such lawsuits and of any settlement may be significant. These costs may exceed the dollar limits of our insurance policies or may not be covered at all by our insurance policies. Because the price of our common stock has been, and may continue to be, volatile, we can provide no assurance that additional securities or other litigation will not be filed against us in the future. See Note 14. "Commitments and Contingencies – Legal Proceedings" to our consolidated financial statements for more information on our legal proceedings, including our securities class action and derivative actions.

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

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

- difficulty in assimilating the operations and personnel of the acquired or partner company;
- difficulty in effectively integrating the acquired products or technologies with our current products or technologies;

- difficulty in achieving profitable commercial scale from acquired technologies;
- difficulty in maintaining controls, procedures, and policies during the transition and integration;
- disruption of our ongoing business and distraction of our management and associates from other opportunities and challenges due to integration issues;
- difficulty integrating the acquired or partner company's accounting, management information, and other administrative systems;
- difficulty managing joint ventures with our partners, potential litigation with joint venture partners, and reliance upon joint ventures that we do not control;
- inability to retain key technical and managerial personnel of the acquired business;
- inability to retain key customers, vendors, and other business partners of the acquired business;
- inability to achieve the financial and strategic goals for the acquired and combined businesses, as a result of insufficient capital resources or otherwise;
- incurring acquisition-related costs or amortization costs for acquired intangible assets that could impact our operating results;
- potential impairment of our relationships with our associates, customers, partners, distributors, or third-party providers of products or technologies;
- potential failure of the due diligence processes to identify significant issues with product quality, legal and financial liabilities, among other things;
- potential inability to assert that internal controls over financial reporting are effective;
- potential inability to obtain, or obtain in a timely manner, approvals from governmental authorities, which could delay or prevent such acquisitions; and
- potential delay in customer purchasing decisions due to uncertainty about the direction of our product offerings.

Mergers and acquisitions of companies are inherently risky, and ultimately, if we do not complete the integration of acquired businesses successfully and in a timely manner, we may not realize the anticipated benefits of the acquisitions to the extent anticipated, which could adversely affect our business, financial condition, or results of operations. In addition, we may seek to dispose of our interests in acquired companies, project pipelines, products, or technologies. We may not recover our initial investment in such interests, in part or at all, which could adversely affect our business, financial condition, or results of operations.

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

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

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

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

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

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

Although our reporting currency is the U.S. dollar, we conduct certain business and incur costs in the local currency of most countries in which we operate. As a result, we are subject to currency translation and transaction risk. For example, certain of our net sales in 2019 were denominated in foreign currencies, such as Australian dollar and Euro, and we expect to continue to have net sales denominated in foreign currencies in the future. Joint ventures or other business arrangements with strategic partners outside the United States have involved, and in the future may involve, significant investments denominated in local currencies. Changes in exchange rates between foreign currencies and the U.S. dollar could affect our results of operations and result in exchange gains or losses. We cannot accurately predict the impact of future exchange rate fluctuations on our results of operations.

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

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

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

Our largest stockholder, Lukas T. Walton (the "Significant Stockholder"), owned approximately 21% of our outstanding common stock as of December 31, 2019. As a result, the Significant Stockholder has substantial influence over all matters requiring stockholder approval, including the election of our directors and the approval of significant corporate transactions such as mergers, tender offers, and the sale of all or substantially all of our assets. The interests of the Significant Stockholder could conflict with or differ from interests of other stockholders. For example, the concentration of ownership held by the Significant Stockholder could delay, defer, or prevent a change of control of our company or impede a merger, takeover, or other business combination, which other stockholders may view favorably.

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

We may be required to record significant charges to earnings should we determine that our long-lived assets or project related assets are impaired. Such charges may have a material impact on our financial position and results of operations. We review long-lived and project related assets for impairment whenever events or changes in circumstances indicate that the carrying amount of such assets may not be recoverable. We consider a project commercially viable or recoverable if it is anticipated to be sold for a profit once it is either fully developed or fully constructed or if the expected operating cash flows from future power generation exceed the cost basis of the asset. If our projects are not considered commercially viable, we would be required to impair the respective assets.

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

We are subject to income taxes in the jurisdictions in which we operate. In December 2017, the United States enacted the Tax Act. The changes included in the Tax Act are broad and complex, and the final effects of the Tax Act may differ from the amounts provided elsewhere in this Annual Report on Form 10-K, possibly materially, due to, among other things, changes in regulations related to the Tax Act, any legislative action to address questions that arise because of the Tax Act, any changes in accounting standards for income taxes or related interpretations in response to the Tax Act, or actions we may take as a result of the Tax Act. Additionally, longstanding international tax laws that determine each country's jurisdictional tax rights in cross-border international trade continue to evolve as a result of the base erosion and profit shifting reporting requirements recommended by the OECD. As these and other tax laws and regulations change, our business, financial condition, and results of operations could be adversely affected.

We are subject to potential tax examinations in various jurisdictions, and taxing authorities may disagree with our interpretations of U.S. and foreign tax laws and may assess additional taxes. We regularly assess the likely outcomes of these examinations in order to determine the appropriateness of our tax provision; however, the outcome of tax examinations cannot be predicted with certainty. Therefore, the amounts ultimately paid upon resolution of such examinations could be materially different from the amounts previously included in our income tax provision, which could have a material impact on our results of operations and cash flows.

In addition, our future effective tax rate could be adversely affected by changes to our operating structure, losses of tax holidays, changes in the jurisdictional mix of earnings among countries with tax holidays or differing statutory tax rates, changes in the valuation of deferred tax assets and liabilities, changes in tax laws, and the discovery of new information in the course of our tax return preparation process. Any changes in our effective tax rate may materially and adversely impact our results of operations.

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

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

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

Personal privacy and data security have become significant issues in the United States, Europe, and in many other jurisdictions in which we operate. The regulatory framework for privacy and security issues worldwide is rapidly evolving and is likely to remain uncertain for the foreseeable future. Furthermore, federal, state, or foreign government bodies or agencies have in the past adopted, and may in the future adopt, laws and regulations affecting data privacy, all of which may be subject to invalidation by relevant foreign judicial bodies. Industry organizations also regularly adopt and advocate for new standards in this area.

In the United States, these include rules and regulations promulgated or pending under the authority of federal agencies, state attorneys general, legislatures, and consumer protection agencies. Internationally, many jurisdictions in which we operate have established their own data security and privacy legal framework with which we, relevant suppliers, and customers must comply. For example, the General Data Protection Regulation, a broad-based data privacy regime enacted by the European Parliament, which became effective in May 2018, imposes new requirements on how we collect, process, transfer, and store personal data, and also imposes additional obligations, potential penalties, and risk upon our business. Additionally, the California Consumer Privacy Act, which becomes effective in January 2020, imposes similar data privacy requirements. In many jurisdictions, enforcement actions and consequences for noncompliance are also rising. In addition to government regulation, privacy advocates and industry groups may propose new and different self-regulatory standards that either legally or contractually apply to us. Although we have implemented policies, procedures, and, in certain cases, contractual arrangements designed to facilitate compliance with applicable privacy and data security laws and standards, any inability or perceived inability to adequately address privacy and security concerns, even if unfounded, or comply with applicable privacy and data security laws, regulations, and policies, could result in additional fines, costs, and liabilities to us, damage our reputation, inhibit sales, and adversely affect our business.

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

We may be unable to respond to changes in business and economic conditions, engage in transactions that might otherwise be beneficial to us, and obtain additional financing, if needed, because the senior secured credit facility made available under our amended and restated credit agreement with several financial institutions as lenders and JPMorgan Chase Bank, N.A. as administrative agent (the “Revolving Credit Facility”) and certain of our project financing

arrangements contain, and other future debt agreements may contain, covenant restrictions that limit our ability to, among other things:

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

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

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

None.

Item 2. ***Properties***

As of December 31, 2019, our principal properties consisted of the following:

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

(1) Includes our manufacturing plant located in Lake Township, Ohio, a short distance from our plant in Perrysburg, Ohio.

(2) In December 2012, we ceased manufacturing at our German plant. Since its closure, we have continued to market such property for sale.

Item 3. ***Legal Proceedings***

See Note 14. "Commitments and Contingencies – Legal Proceedings" to our consolidated financial statements for information regarding legal proceedings and related matters.

Item 4. ***Mine Safety Disclosures***

None.

PART II

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

Market Information

Our common stock is listed on The Nasdaq Stock Market LLC under the symbol FSLR.

Holders

As of February 14, 2020, there were 46 record holders of our common stock, which does not reflect beneficial owners of our shares.

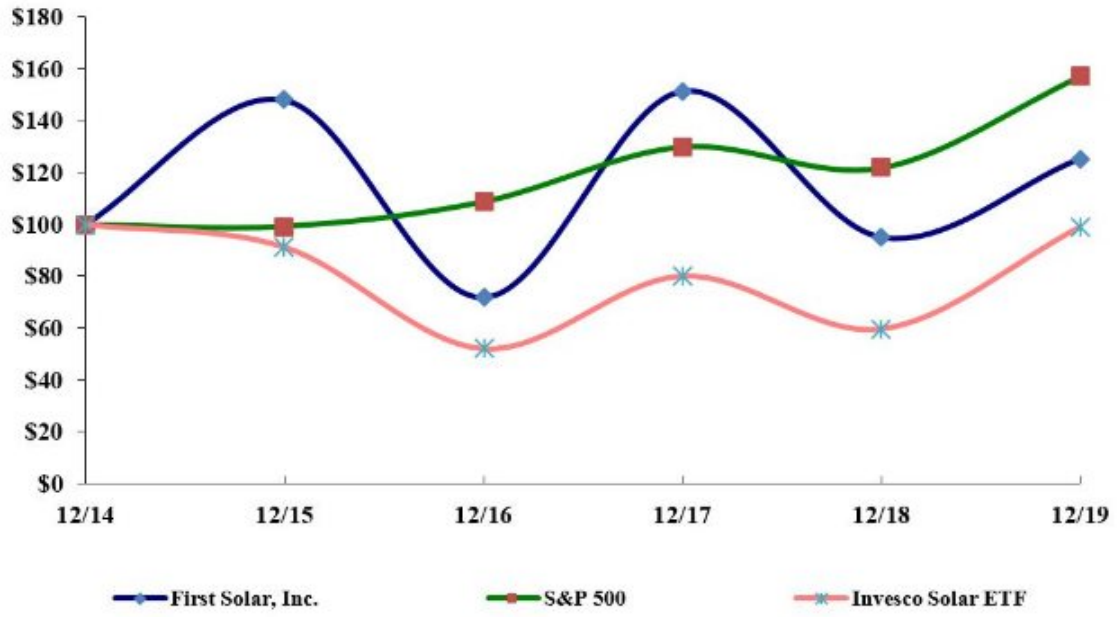
Dividend Policy

We have never paid and do not expect to pay dividends on our common stock for the foreseeable future. Furthermore, our Revolving Credit Facility imposes restrictions on our ability to declare or pay dividends. The declaration and payment of dividends is subject to the discretion of our board of directors and depends on various factors, including our net income, financial condition, cash requirements, and future prospects as well as the restrictions under our Revolving Credit Facility and other factors considered relevant by our board of directors. We expect to prioritize our working capital requirements, capacity expansion and other capital expenditure needs, project development and construction, and merger and acquisition opportunities prior to returning capital to our shareholders.

Stock Price Performance Graph

The following graph compares the five-year cumulative total return on our common stock relative to the cumulative total returns of the S&P 500 Index and the Invesco Solar ETF, which represents a peer group of solar companies. For purposes of the graph, an investment of $100 (with reinvestment of all dividends) is assumed to have been made in our common stock, the S&P 500 Index, and the Invesco Solar ETF on December 31, 2014, and its relative performance is tracked through December 31, 2019. This graph is not "soliciting material," is not deemed filed with the SEC, and is not to be incorporated by reference in any filing by us under the Securities Act or the Exchange Act, whether made before or after the date hereof, and irrespective of any general incorporation language in any such filing. The stock price performance shown in the graph represents past performance and is not necessarily indicative of future stock price performance.

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



* $100 invested on December 31, 2014 in stock or index, including reinvestment of dividends. Index calculated on a month-end basis.

Recent Sales of Unregistered Securities

None.

Purchases of Equity Securities by the Issuer and Affiliate Purchases

None.

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

The following tables set forth our selected financial data for the periods and at the dates indicated. The selected financial data from the consolidated statements of operations and consolidated statements of cash flows for the years ended December 31, 2019, 2018, and 2017 and the selected financial data from the consolidated balance sheets as of December 31, 2019 and 2018 have been derived from the audited consolidated financial statements included in this Annual Report on Form 10-K. The selected financial data from the consolidated statements of operations and consolidated statements of cash flows for the years ended December 31, 2016 and 2015 and the selected financial data from the consolidated balance sheets as of December 31, 2017, 2016, and 2015 have been derived from audited consolidated financial statements not included in this Annual Report on Form 10-K. The information presented below should also be read in conjunction with our consolidated financial statements and the related notes thereto and Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations."

	Years Ended December 31,				
	2019	2018	2017	2016	2015
	(In thousands, except per share amounts)				
Net sales	$ 3,063,117	$ 2,244,044	$ 2,941,324	$ 2,904,563	$ 4,112,650
Gross profit	549,212	392,177	548,947	638,418	1,132,762
Operating (loss) income	(161,785)	40,113	177,851	(568,151)	730,159
Net (loss) income	(114,933)	144,326	(165,615)	(416,112)	593,406
Net (loss) income per share:					
Basic	$ (1.09)	$ 1.38	$ (1.59)	$ (4.05)	$ 5.88
Diluted	$ (1.09)	$ 1.36	$ (1.59)	$ (4.05)	$ 5.83
Cash dividends declared per common share	$ —	$ —	$ —	$ —	$ —
Net cash provided by (used in) operating activities	$ 174,201	$ (326,809)	$ 1,340,677	$ 206,753	$ (325,209)
Net cash (used in) provided by investing activities	(362,298)	(682,714)	(626,802)	144,520	(156,177)
Net cash provided by (used in) financing activities	74,943	255,228	192,045	(136,393)	101,207

	December 31,				
	2019	2018	2017	2016	2015
	(In thousands)				
Cash and cash equivalents	$ 1,352,741	$ 1,403,562	$ 2,268,534	$ 1,347,155	$ 1,126,826
Marketable securities	811,506	1,143,704	720,379	607,991	703,454
Total assets	7,515,689	7,121,362	6,864,501	6,824,368	7,360,392
Total long-term debt	471,697	466,791	393,540	188,388	289,415
Total liabilities	2,418,922	1,908,959	1,765,804	1,606,019	1,741,996
Total stockholders' equity	5,096,767	5,212,403	5,098,697	5,218,349	5,618,396

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

The following discussion and analysis of our financial condition and results of operations should be read in conjunction with our consolidated financial statements and the related notes thereto included in this Annual Report on Form 10-K. In addition to historical financial information, the following discussion and analysis contains forward-looking statements that involve risks, uncertainties, and assumptions as described under the "Note Regarding Forward-Looking Statements" that appears earlier in this Annual Report on Form 10-K. Our actual results could differ materially from those anticipated by these forward-looking statements as a result of many factors, including those discussed under Item 1A. "Risk Factors," and elsewhere in this Annual Report on Form 10-K. This discussion and analysis does not address certain items in respect of the year ended December 31, 2017 in reliance on amendments to disclosure requirements adopted by the SEC in 2019. See Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations" in our Annual Report on Form 10-K for the year ended December 31, 2018 for comparative discussions of our results of operations and liquidity and capital resources for the years ended December 31, 2018 and 2017.

Executive Overview

We are a leading global provider of comprehensive PV solar energy solutions. We design, manufacture, and sell PV solar modules with an advanced thin film semiconductor technology and also develop and sell PV solar power systems that primarily use the modules we manufacture. Additionally, we provide O&M services to system owners. We have substantial, ongoing R&D efforts focused on various technology innovations. We are the world's largest thin film PV solar module manufacturer and one of the world's largest PV solar module manufacturers.

Certain of our financial results and other key operational developments for the year ended December 31, 2019 include the following:

- Net sales for 2019 increased by 36% to $3.1 billion compared to $2.2 billion in 2018. The increase in net sales was primarily attributable to an increase in third-party module sales, the sale of the Sun Streams, Sunshine Valley, and Beryl projects, and ongoing construction activities at the Phoebe and GA Solar 4 projects, partially offset by the sale of the Mashiko and certain Indian projects in 2018 and the completion of substantially all construction activities at the California Flats, Willow Springs, and various other projects in Florida in late 2018 and early 2019.

- Gross profit increased 0.4 percentage points to 17.9% during 2019 from 17.5% during 2018 primarily as a result of higher gross profit on third-party module sales, improved utilization of our manufacturing facilities, and a reduction to our product warranty liability due to revised module return rates, partially offset by the mix of lower gross profit projects sold or under construction during the period and the settlement of a tax examination with the state of California in 2018, which affected our estimates of sales and use taxes due for certain projects.

- During 2019, we commenced commercial production of Series 6 modules at our second manufacturing facility in Ho Chi Minh City, Vietnam and our manufacturing facility in Lake Township, Ohio, bringing our total installed Series 6 nameplate production capacity across all our facilities to 5.5 GW_{DC}. We produced 5.7 GW_{DC} of Series 4 and Series 6 modules during 2019, which represented a 111% increase from 2018. The increase in production was primarily driven by the incremental Series 6 production capacity added at our manufacturing facilities as described above. We expect to produce approximately 5.7 GW_{DC} of solar modules during 2020, substantially all of which will be Series 6 modules.

- In September 2019, we announced our transition from an internal EPC service model in the United States to an external model, in which we expect to leverage the capabilities of third-party EPC services in providing power plant solutions to our systems segment customers. This transition is not expected to affect any projects currently under construction. The shift to an external EPC service model in the United States aligns with our typical model in international markets and is facilitated, in part, by our Series 6 module technology and its

improved BoS compatibility. See Note 21. "Segment and Geographical Information" to our consolidated financial statements for more information on our operating segments.

- Following an evaluation of the long-term sustainable cost structure, competitiveness, and risk-adjusted returns of our U.S. project development business, we have determined it is in the best interest of our stockholders to explore options for this business line. This exploration may result in, among other possibilities, a partnership with a third party who possesses complimentary competencies or a sale of all or a portion of our U.S. project development business. This exploration of options for our U.S. project development business is not subject to any definitive timetable and there can be no assurances that this process will result in any transaction.

- In January 2020, we entered into a Memorandum of Understanding ("MOU") to settle a class action lawsuit filed in 2012 in the United States District Court for the District of Arizona (hereafter "Arizona District Court") against the Company and certain of our current and former officers and directors. Pursuant to the MOU, we agreed to pay a total of $350 million to settle the claims brought on behalf of all persons who purchased or otherwise acquired the Company's shares during a specified period, in exchange for mutual releases and a dismissal with prejudice of the complaint upon court approval of the settlement. The proposed settlement contains no admission of liability, wrongdoing, or responsibility by any of the parties.

Market Overview

The solar industry continues to be characterized by intense pricing competition, both at the module and system levels. In particular, module average selling prices in many global markets have declined in recent years and are expected to continue to decline to some degree in the future. In the aggregate, we believe manufacturers of solar cells and modules have significant installed production capacity, relative to global demand, and the ability for additional capacity expansion. We believe the solar industry may from time to time experience periods of structural imbalance between supply and demand (i.e., where production capacity exceeds global demand), and that such periods will continue to put pressure on pricing. Additionally, intense competition at the system level may result in an environment in which pricing falls rapidly, thereby further increasing demand for solar energy solutions but constraining the ability for project developers, and diversified module manufacturers to sustain meaningful and consistent profitability. In light of such market realities, we are focusing on our strategies and points of differentiation, which include our advanced module technology, our manufacturing process, our diversified capabilities, our financial viability, and the sustainability advantage of our modules and systems.

Global solar markets continue to expand and develop, in part aided by demand elasticity resulting from declining industry average selling prices, both at the module and system levels, which have promoted the widespread adoption of solar energy. As a result of such market opportunities, we are expanding our manufacturing capacity while also developing and operating multiple solar projects around the world as we execute on our advanced-stage utility-scale project pipeline. We also continue to develop our early-to-mid-stage project pipeline and evaluate acquisitions of projects to further expand both our early-to-mid-stage and advanced-stage pipelines. See the tables under "Management's Discussion and Analysis of Financial Condition and Results of Operations – Systems Project Pipeline" for additional information about projects within our advanced-stage pipeline. Although we expect a meaningful portion of our future consolidated net sales, operating income, and cash flows to be derived from such projects, we expect third-party module sales to have a more significant impact on our operating results as we continue to expand our manufacturing capacity and leverage the benefits of our Series 6 module technology.

Lower industry module and system pricing is expected to continue to contribute to diversification in global electricity generation and further demand for solar energy solutions as such solutions compete economically with traditional forms of energy generation. Over time, however, declining average selling prices may adversely affect our results of operations to the extent we have not already entered into contracts for future module or system sales. If competitors reduce pricing to levels below their costs; bid aggressively low prices for module sale agreements or PPAs; or are able to operate at minimal or negative operating margins for sustained periods of time, our results of operations could be further adversely affected. In certain markets in California and elsewhere, an oversupply imbalance at the grid level may reduce short-

to-medium term demand for new solar installations relative to prior years, lower PPA pricing, and lower margins on module and system sales to such markets. However, we believe the effects of such imbalance can be mitigated by modern solar power plants that offer a flexible operating profile, thereby promoting greater grid stability and enabling a higher penetration of solar energy. We continue to address these uncertainties, in part, by executing on our module technology improvements, continuing the development of key markets, partnering with grid operators and utility companies, and implementing certain other cost reduction initiatives.

We face intense competition from manufacturers of crystalline silicon solar modules and developers of solar power projects. Solar module manufacturers compete with one another on price and on several module value attributes, including wattage (or conversion efficiency), energy yield, and reliability, and developers of systems compete on various factors such as net present value, return on equity, and LCOE. Many crystalline silicon cell and wafer manufacturers continue to transition from lower efficiency BSF multi-crystalline cells (the legacy technology against which we have generally competed in our markets) to higher efficiency PERC mono-crystalline cells at competitive cost structures. Additionally, while conventional solar modules, including the solar modules we produce, are monofacial, meaning their ability to produce energy is a function of direct and diffuse irradiance on their front side, certain manufacturers of mono-crystalline PERC modules are promoting bifacial modules that also capture diffuse irradiance on the back side of a module. The cost effective manufacture of bifacial PERC modules has been enabled, in part, by the expansion of inexpensive crystal growth and diamond wire saw capacity in China. Bifaciality compromises nameplate efficiency, but by converting both front and rear side irradiance, such technology may improve the overall energy production of a module relative to nameplate efficiency when applied in certain applications, which, after considering the incremental BoS and other costs, could potentially lower the overall LCOE of a system when compared to systems using conventional solar modules, including the modules we produce.

We believe we are among the lowest cost module manufacturers in the solar industry on a module cost per watt basis, based on publicly available information. This cost competitiveness allows us to compete favorably in markets where pricing for modules and systems is highly competitive. Our cost competitiveness is based in large part on our module wattage (or conversion efficiency), proprietary manufacturing technology (which enables us to produce a CdTe module in a matter of hours using a continuous and highly automated industrial manufacturing process, as opposed to a batch process), and our focus on operational excellence. In addition, our CdTe modules use approximately 1-2% of the amount of semiconductor material that is used to manufacture conventional crystalline silicon solar modules. The cost of polysilicon is a significant driver of the manufacturing cost of crystalline silicon solar modules, and the timing and rate of change in the cost of silicon feedstock and polysilicon could lead to changes in solar module pricing levels. In recent years, polysilicon consumption per cell has been reduced through various initiatives, such as the adoption of diamond wire saw technology, which have contributed to declines in our relative manufacturing cost competitiveness over conventional crystalline silicon module manufacturers.

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

While our modules and systems are generally competitive in cost, reliability, and performance attributes, there can be no guarantee such competitiveness will continue to exist in the future to the same extent or at all. Any declines in the competitiveness of our products could result in additional margin compression, further declines in the average selling prices of our modules and systems, erosion in our market share for modules and systems, and/or declines in overall net

sales. We continue to focus on enhancing the competitiveness of our solar modules and systems by accelerating progress along our module technology and cost reduction roadmaps.

Certain Trends and Uncertainties

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

Our long-term strategic plans are focused on our goal to create long-term shareholder value through a balance of growth, profitability, and liquidity. In executing such plans, we are focusing on providing utility-scale PV solar energy solutions using our modules in key geographic markets that we believe have a compelling need for mass-scale PV electricity, including markets throughout the Americas, the Asia-Pacific region, Europe, and certain other strategic markets. Additionally, we are focusing on opportunities in which our PV solar energy solutions can compete directly with traditional forms of energy generation on an LCOE or similar basis, or complement such generation offerings. Such opportunities include the retirement and replacement of fossil fuel-based generation resources with utility-scale PV solar energy solutions. For example, cumulative global retirements of coal generation plants are expected to approximate 900 GW_{DC} by 2040, representing a significant increase in the potential market for solar energy.

This focus on our core module and utility-scale offerings exists within a current market environment that includes rooftop and distributed generation solar, particularly in the United States. While it is unclear how rooftop and distributed generation solar might impact our core utility-scale based offerings over the next several years, we believe that utility-scale solar will continue to be a compelling offering for companies with technology and cost leadership and will continue to represent an increasing portion of the overall electricity generation mix. However, our module offerings in certain international markets may be driven, in part, by future demand for rooftop and distributed generation solar solutions.

Our ability to provide utility-scale offerings on economically attractive terms depends, in part, on market factors outside our control, such as interest rate fluctuations, domestic or international trade policies, and government support programs. Adverse changes in these factors could increase the cost of utility-scale systems, which could reduce demand for such systems and limit the number of potential buyers.

We closely evaluate and monitor the appropriate level of resources required as we pursue the most advantageous and cost effective projects and partnerships in our key markets. We have dedicated, and intend to continue to dedicate, significant capital and human resources to reduce the total installed cost of PV solar energy and to ensure that our solutions integrate well into the overall electricity ecosystem of each specific market. We expect that, over time, the majority of our consolidated net sales, operating income, and cash flows will come from solar offerings in the key geographic markets described above. The timing, execution, and financial impacts of our long-term strategic plans are subject to risks and uncertainties, as described in Item 1A. "Risk Factors," and elsewhere in this Annual Report on Form 10-K. We are focusing our resources in those markets and energy applications in which solar power can be a least-cost, best-fit energy solution, particularly in regions with significant current or projected electricity demand, relatively high existing electricity prices, strong demand for renewable energy generation, and high solar resources.

Creating or maintaining a market position in certain strategically targeted markets and energy applications also requires us to adapt to new and changing market conditions. For example, our offerings from time to time may need to be competitively priced at levels associated with minimal gross profit margins, which may adversely affect our results of operations. We expect the profitability associated with our various sales offerings to vary from one another over time, and possibly vary from our internal long-range profitability expectations and targets, depending on the market opportunity and the relative competitiveness of our offerings compared with other energy solutions, traditional or otherwise, that are available to potential customers. In addition, as we execute on our long-term strategic plans, we will continue to monitor and adapt to any changing dynamics in emerging technologies, such as commercially viable energy storage solutions, which are expected to further enable PV solar power systems to compete with traditional forms of

energy generation by shifting the delivery of energy generated by such systems to periods of greater demand. Storage solutions continue to evolve in terms of technology and cost, and cumulative global deployments of storage capacity are expected to exceed 900 GW_{DC} by 2040, representing a significant increase in the potential market for renewable energy. We will also continue to monitor and adapt to changing dynamics in the market set of potential buyers of solar projects. Market environments with few potential project buyers and a higher cost of capital would generally exert downward pressure on the potential revenue from the solar projects we are developing, whereas, conversely, market environments with many potential project buyers and a lower cost of capital would likely have a favorable impact on the potential revenue from such solar projects.

On occasion, we may temporarily own and operate certain systems with the intention to sell them at a later date. We may also enter into business arrangements with strategic partners that result in us temporarily retaining an ownership interest in the underlying systems projects we develop, supply modules to, or construct, potentially for a period of up to several years. In these situations, we may retain such ownership interests in a consolidated or unconsolidated separate entity. We may also elect to construct and temporarily retain ownership interests in partially contracted or uncontracted systems for which there is a partial or no PPA with an off-taker, such as a utility, but rather an intent to sell some portion of the electricity produced by the system on an open contract basis until the system is sold. Expected revenue from projects without a PPA for the full off-take of the system is subject to greater variability and uncertainty based on market factors and is typically lower than projects with a PPA for the full off-take of the system. Furthermore, all system pricing is effected by the pricing of energy to be sold on an open contract basis following the termination of the PPA (i.e., merchant pricing curves), and changes in market assumptions regarding future open contract sales may also result in significant variability and uncertainty in the value of our systems projects.

We continually evaluate forecasted global demand, competition, and our addressable market and seek to effectively balance manufacturing capacity with market demand and the nature and extent of our competition. During 2019, we commenced commercial production of Series 6 modules at our second manufacturing facility in Ho Chi Minh City, Vietnam and our manufacturing facility in Lake Township, Ohio, a short distance from our plant in Perrysburg, Ohio. These additional manufacturing plants, and any other potential investments to add or otherwise modify our existing manufacturing capacity in response to market demand and competition, may require significant internal and possibly external sources of capital, and may be subject to certain risks and uncertainties described in Item 1A. “Risk Factors,” including those described under the headings “Our future success depends on our ability to effectively balance manufacturing production with market demand, convert existing production facilities to support new product lines, decrease our manufacturing cost per watt, and, when necessary, continue to build new manufacturing plants over time in response to market demand, all of which are subject to risks and uncertainties” and “If any future production lines are not built in line with committed schedules, it may adversely affect our future growth plans. If any future production lines do not achieve operating metrics similar to our existing production lines, our solar modules could perform below expectations and cause us to lose customers.”

Systems Project Pipeline

The following tables summarize, as of February 20, 2020, our approximately 1.3 GW_{AC} advanced-stage project pipeline. The actual volume of modules installed in our projects will be greater than the project size in MW_{AC} as module volumes required for a project are based upon MW_{DC}, which will be greater than the MW_{AC} size pursuant to a DC-AC ratio typically ranging from 1.1 to 1.4. Such ratio varies across different projects due to many factors, including PPA pricing and the location, design, and costs of the system. Projects are typically removed from our advanced-stage project pipeline tables below once we substantially complete construction of the project and after substantially all of the associated project revenue is recognized. A project, or a portion of a project, may also be removed from the tables below in the event a project is not able to be sold due to the changing economics of the project or other factors or we decide to temporarily own and operate, or retain interests in, a project based on strategic opportunities or market factors.

As part of our transition to an external EPC service model in the United States, we no longer expect to provide EPC services for the customer developed 51 MW_{AC} Troy Solar project for which construction had not commenced.

Accordingly, we removed such project from the tables below as our arrangement with the customer now represents a third-party module sale.

Projects under Sales Agreements

The following table includes uncompleted sold projects, projects under sales contracts subject to conditions precedent, and EPC agreements:

Project/Location	Project Size in MW_{AC}	PPA Contracted Partner	Customer	Expected Year Revenue Recognition Will Be Completed	% of Revenue Recognized as of December 31, 2019
GA Solar 4, Georgia	200	Georgia Power Company	Origis Energy USA	2020	67%
Sun Streams, Arizona	150	SCE	(1)	2020	94%
Sunshine Valley, Nevada	100	SCE	(1)	2020	96%
Seabrook, South Carolina	72	South Carolina Electric and Gas Company	Dominion Energy	2020	94%
Japan (multiple locations)	52	TEPCO Energy	(2)	2020	—%
Windhub A, California	20	SCE	(1)	2020	96%
Total	594				

Projects with Executed PPAs Not under Sales Agreements

Project/Location	Project Size in MW_{AC}	PPA Contracted Partner	Fully Permitted	Expected or Actual Substantial Completion Year	% Complete as of December 31, 2019
Sun Streams 2, Arizona	150	Microsoft Corporation	Yes	2020/2021	10%
Luz del Norte, Chile	141	(3)	Yes	2016	100%
American Kings Solar, California	123	SCE	Yes	2020	27%
Sun Streams PVS, Arizona	65	APS	No	2022	3%
Ishikawa, Japan	59	Hokuriku Electric Power Company	Yes	2018	100%
Japan (multiple locations)	55	(4)	Yes	2021/2022	17%
Miyagi, Japan	40	Tohoku Electric Power Company	Yes	2021	42%
India (multiple locations)	40	(5)	Yes	2017	100%
Total	673				

(1) EDP Renewables and ConnectGen

(2) Contracted but not specified

(3) Approximately 70 MW_{AC} of the plant's capacity is contracted under various PPAs

(4) Chubu Electric Power Company – 38 MW_{AC} and Hokuriku Electric Power Company – 17 MW_{AC}

(5) Gulbarga Electricity Supply Co. – 20 MW_{AC} and Chamundeshwari Electricity Supply Co. – 20 MW_{AC}

Results of Operations

The following table sets forth our consolidated statements of operations as a percentage of net sales for the years ended December 31, 2019, 2018, and 2017:

	Years Ended December 31,		
	2019	2018	2017
Net sales	100.0 %	100.0 %	100.0 %
Cost of sales	82.1 %	82.5 %	81.3 %
Gross profit	17.9 %	17.5 %	18.7 %
Selling, general and administrative	6.7 %	7.9 %	6.9 %
Research and development	3.2 %	3.8 %	3.0 %
Production start-up	1.5 %	4.0 %	1.4 %
Litigation loss	11.9 %	— %	— %
Restructuring and asset impairments	— %	— %	1.3 %
Operating (loss) income	(5.3)%	1.8 %	6.0 %
Foreign currency income (loss), net	0.1 %	— %	(0.3)%
Interest income	1.6 %	2.7 %	1.2 %
Interest expense, net	(0.9)%	(1.2)%	(0.9)%
Other income, net	0.6 %	1.8 %	0.8 %
Income tax benefit (expense)	0.2 %	(0.2)%	(12.6)%
Equity in earnings, net of tax	— %	1.5 %	0.1 %
Net (loss) income	(3.8)%	6.4 %	(5.6)%

Segment Overview

We operate our business in two segments. Our modules segment involves the design, manufacture, and sale of CdTe solar modules to third parties, and our systems segment includes the development, construction, operation, maintenance, and sale of PV solar power systems, including any modules installed in such systems and any revenue from energy generated by such systems.

Net sales

Modules Business

We generally price and sell our solar modules on a per watt basis. During 2019, Cypress Creek Renewables, Longroad Energy, and NextEra Energy each accounted for more than 10% of our modules business net sales, and the majority of our solar modules were sold to integrators and operators of systems in the United States and France. Substantially all of our modules business net sales during 2019 were denominated in U.S. dollars and Euro. We recognize revenue for module sales at a point in time following the transfer of control of the modules to the customer, which typically occurs upon shipment or delivery depending on the terms of the underlying contracts. The revenue recognition policies for module sales are further described in Note 2. “Summary of Significant Accounting Policies” to our consolidated financial statements.

Systems Business

During 2019, EDP Renewables, ConnectGen, and Innergex Renewable Energy each accounted for more than 10% of our systems business net sales, and the majority of our systems business net sales were in the United States and Australia. Substantially all of our systems business net sales during 2019 were denominated in U.S. dollars and Australian dollars. We typically recognize revenue for sales of solar power systems using cost based input methods, which result in revenue being recognized as work is performed based on the relationship between actual costs incurred compared to the total estimated costs for a given contract. We may also recognize revenue for the sale of a development project, which excludes EPC services, or for the sale of a completed system when we enter into the associated sales contract with the customer. The revenue recognition policies for our systems business are further described in Note 2. "Summary of Significant Accounting Policies" to our consolidated financial statements.

The following table shows net sales by reportable segment for the years ended December 31, 2019, 2018, and 2017:

	Years Ended			Change			
(Dollars in thousands)	2019	2018	2017	2019 over 2018		2018 over 2017	
Modules	$ 1,460,116	$ 502,001	$ 806,398	$ 958,115	191 %	$ (304,397)	(38)%
Systems	1,603,001	1,742,043	2,134,926	(139,042)	(8)%	(392,883)	(18)%
Net sales	$ 3,063,117	$ 2,244,044	$ 2,941,324	$ 819,073	36 %	$ (697,280)	(24)%

Net sales from our modules segment increased by $958.1 million in 2019 primarily due to a 180% increase in the volume of watts sold and a 4% increase in the average selling price per watt. Net sales from our systems segment decreased by $139.0 million in 2019 primarily as a result of the sale of the Mashiko and certain India projects in 2018 and the completion of substantially all construction activities at the California Flats, Willow Springs, and various other projects in Florida in late 2018 and early 2019, partially offset by the sale of the Sun Streams, Sunshine Valley, and Beryl projects and ongoing construction activities at the Phoebe and GA Solar 4 projects in 2019.

Cost of sales

Modules Business

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

Systems Business

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

The following table shows cost of sales by reportable segment for the years ended December 31, 2019, 2018, and 2017:

	Years Ended			Change			
(Dollars in thousands)	2019	2018	2017	2019 over 2018		2018 over 2017	
Modules	$ 1,170,037	$ 552,468	$ 694,060	$ 617,569	112%	$ (141,592)	(20)%
Systems	1,343,868	1,299,399	1,698,317	44,469	3%	(398,918)	(23)%
Cost of sales	$ 2,513,905	$ 1,851,867	$ 2,392,377	$ 662,038	36%	$ (540,510)	(23)%
% of net sales	82.1%	82.5%	81.3%				

Cost of sales increased $662.0 million, or 36%, and decreased 0.4 percentage points as a percent of net sales when comparing 2019 with 2018. The increase in cost of sales was driven by a $44.5 million increase in our systems segment cost of sales primarily due to the mix of lower gross profit projects sold or under construction during the period. The increase in cost of sales was also driven by a $617.6 million increase in our modules segment cost of sales primarily as a result of the following:

- higher costs of $817.5 million from an increase in the volume of modules sold; and
- a reduction in our module collection and recycling liability of $25.4 million in 2018 due to higher by-product credits for glass, lower capital costs, and adjustments to certain valuation assumptions; partially offset by
- a reduction to our product warranty liability of $80.0 million due to revised module return rates;
- lower under-utilization and certain other charges associated with the initial ramp of certain Series 6 manufacturing lines, which decreased cost of sales by $40.3 million; and
- continued reductions in the cost per watt of our solar modules, which decreased cost of sales by $107.1 million.

Gross profit

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

The following table shows gross profit for the years ended December 31, 2019, 2018, and 2017:

	Years Ended			Change			
(Dollars in thousands)	2019	2018	2017	2019 over 2018		2018 over 2017	
Gross profit	$ 549,212	$ 392,177	$ 548,947	$ 157,035	40%	$ (156,770)	(29)%
% of net sales	17.9%	17.5%	18.7%				

Gross profit increased 0.4 percentage points to 17.9% during 2019 from 17.5% during 2018 primarily as a result of higher gross profit on third-party module sales, improved utilization of our manufacturing facilities, and the reduction to our product warranty liability described above, partially offset by the mix of lower gross profit projects sold or under construction during the period, the settlement of a tax examination with the state of California in 2018, which affected our estimates of sales and use taxes due for certain projects, and the reduction to our module collection and recycling liability in 2018 described above.

Selling, general and administrative

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

The following table shows selling, general and administrative expense for the years ended December 31, 2019, 2018, and 2017:

	Years Ended			Change			
(Dollars in thousands)	2019	2018	2017	2019 over 2018		2018 over 2017	
Selling, general and administrative	$ 205,471	$ 176,857	$ 202,699	$ 28,614	16%	$ (25,842)	(13)%
% of net sales	6.7%	7.9%	6.9%				

Selling, general and administrative expense in 2019 increased compared to 2018 primarily due to higher employee compensation expense, lower accretion expense in 2018 associated with the reduction in our module collection and recycling liability described above, and higher professional fees.

Research and development

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

The following table shows research and development expense for the years ended December 31, 2019, 2018, and 2017:

	Years Ended			Change			
(Dollars in thousands)	2019	2018	2017	2019 over 2018		2018 over 2017	
Research and development	$ 96,611	$ 84,472	$ 88,573	$ 12,139	14%	$ (4,101)	(5)%
% of net sales	3.2%	3.8%	3.0%				

Research and development expense in 2019 increased compared to 2018 primarily due to increased material and module testing costs and higher employee compensation expense.

Production start-up

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

The following table shows production start-up expense for the years ended December 31, 2019, 2018, and 2017:

	Years Ended			Change			
(Dollars in thousands)	2019	2018	2017	2019 over 2018		2018 over 2017	
Production start-up	$ 45,915	$ 90,735	$ 42,643	$ (44,820)	(49)%	$ 48,092	113%
% of net sales	1.5%	4.0%	1.4%				

During 2019, we incurred production start-up expense at our new facility in Lake Township, Ohio. We also incurred production start-up expense at our second facility in Ho Chi Minh City, Vietnam in early 2019. During 2018, we incurred production start-up expense for the transition to Series 6 module manufacturing at our facilities in Kulim, Malaysia and Ho Chi Minh City, Vietnam. We also incurred production start-up expense for the transition to Series 6 module manufacturing at our facility in Perrysburg, Ohio in early 2018.

Litigation loss

The following table shows litigation loss for the years ended December 31, 2019, 2018, and 2017:

	Years Ended			Change			
(Dollars in thousands)	2019	2018	2017	2019 over 2018		2018 over 2017	
Litigation loss	$ 363,000	$ —	$ —	$ 363,000	100%	$ —	—%
% of net sales	11.9%	—%	—%				

In January 2020, we entered into an MOU to settle a class action lawsuit filed in 2012 in the United States District Court for the District of Arizona against the Company and certain of our current and former officers and directors.

Pursuant to the MOU, we agreed to pay a total of $350 million to settle the claims brought on behalf of all persons who purchased or otherwise acquired the Company's shares during a specified period, in exchange for mutual releases and a dismissal with prejudice of the complaint upon court approval of the settlement. The proposed settlement contains no admission of liability, wrongdoing, or responsibility by any of the parties.

We are also party to a lawsuit filed in 2015 in the Arizona District Court by putative stockholders that opted out of the class action lawsuit described above. During 2019, we accrued $13 million of estimated losses for this action, which represents our best estimate of the lower bound of the costs to resolve this case. The ultimate amount of loss may be materially higher.

See Note 14. "Commitments and Contingencies" to our consolidated financial statements for additional information on these matters.

Restructuring and asset impairments

Restructuring and asset impairments consist of expenses incurred related to significant restructuring initiatives and includes any associated asset impairments, costs for employee termination benefits, costs for contract terminations and penalties, and other restructuring related costs.

The following table shows restructuring and asset impairments for the years ended December 31, 2019, 2018, and 2017:

	Years Ended			Change			
(Dollars in thousands)	2019	2018	2017	2019 over 2018		2018 over 2017	
Restructuring and asset impairments	$ —	$ —	$ 37,181	$ —	—%	$ (37,181)	(100)%
% of net sales	—%	—%	1.3%				

In November 2016, our board of directors approved a set of initiatives intended to accelerate our transition to Series 6 module manufacturing and restructure our operations. As part of these actions, we recorded restructuring and asset impairment charges of $41.8 million during 2017. In 2017, we also reversed a customs tax liability associated with a prior restructuring activity, which reduced our restructuring charges by $4.7 million during the period. See Note 4. "Restructuring and Asset Impairments" to our consolidated financial statements for additional information on these matters.

Foreign currency income (loss), net

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

The following table shows foreign currency income (loss), net for the years ended December 31, 2019, 2018, and 2017:

	Years Ended			Change			
(Dollars in thousands)	2019	2018	2017	2019 over 2018		2018 over 2017	
Foreign currency income (loss), net	$ 2,291	$ (570)	$ (9,640)	$ 2,861	502%	$ 9,070	94%

Foreign currency income increased in 2019 compared to 2018 primarily due to lower costs associated with hedging activities related to our subsidiaries in Japan and India.

Interest income

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

The following table shows interest income for the years ended December 31, 2019, 2018, and 2017:

	Years Ended			Change			
(Dollars in thousands)	2019	2018	2017	2019 over 2018		2018 over 2017	
Interest income	$ 48,886	$ 59,788	$ 35,704	$ (10,902)	(18)%	$ 24,084	67%

Interest income during 2019 decreased compared to 2018 primarily due to lower average balances of cash, cash equivalents, and time deposits and lower interest rates associated with restricted investments, partially offset by higher interest rates on cash and cash equivalents.

Interest expense, net

Interest expense, net is primarily comprised of interest incurred on long-term debt, settlements of interest rate swap contracts, and changes in the fair value of interest rate swap contracts that do not qualify for hedge accounting in accordance with Accounting Standards Codification ("ASC") 815. We may capitalize interest expense to our project assets or property, plant and equipment when such costs qualify for interest capitalization, which reduces the amount of net interest expense reported in any given period.

The following table shows interest expense, net for the years ended December 31, 2019, 2018, and 2017:

	Years Ended			Change			
(Dollars in thousands)	2019	2018	2017	2019 over 2018		2018 over 2017	
Interest expense, net	$ (27,066)	$ (25,921)	$ (25,765)	$ (1,145)	4%	$ (156)	1%

Interest expense, net in 2019 was consistent with interest expense, net in 2018.

Other income, net

Other income, net is primarily comprised of miscellaneous items and realized gains and losses on the sale of marketable securities and restricted investments.

The following table shows other income, net for the years ended December 31, 2019, 2018, and 2017:

	Years Ended			Change			
(Dollars in thousands)	2019	2018	2017	2019 over 2018		2018 over 2017	
Other income, net	$ 17,545	$ 39,737	$ 23,965	$ (22,192)	(56)%	$ 15,772	66%

Other income, net decreased in 2019 compared to 2018 primarily due to lower realized gains from the sales of restricted investments, the impairment of a strategic investment, and net charges associated with certain letter of credit arrangements.

Income tax benefit (expense)

Income tax expense or benefit, deferred tax assets and liabilities, and liabilities for unrecognized tax benefits reflect our best estimate of current and future taxes to be paid. We are subject to income taxes in both the United States and numerous foreign jurisdictions in which we operate, principally Australia, Japan, and Malaysia. Significant judgments and estimates are required to determine our consolidated income tax expense. The statutory federal corporate income tax rate in the United States is 21%, and the tax rates in Australia, Japan, and Malaysia are 30%, 30.6%, and 24%, respectively. In Malaysia, we have been granted a long-term tax holiday, scheduled to expire in 2027, pursuant to which substantially all of our income earned in Malaysia is exempt from income tax, conditional upon our continued compliance with certain employment and investment thresholds.

The following table shows income tax benefit (expense) for the years ended December 31, 2019, 2018, and 2017:

	Years Ended			Change			
(Dollars in thousands)	2019	2018	2017	2019 over 2018		2018 over 2017	
Income tax benefit (expense)	$ 5,480	$ (3,441)	$ (371,996)	$ 8,921	(259)%	$ 368,555	(99)%
Effective tax rate	4.6%	3.0%	184.1%				

Our tax rate is affected by recurring items, such as tax rates in foreign jurisdictions and the relative amounts of income we earn in those jurisdictions. The rate is also affected by discrete items that may occur in any given period, but are not consistent from period to period. Income tax expense decreased by $8.9 million during 2019 compared to 2018 primarily due to our pretax loss in the current period, partially offset by discrete tax expenses associated with filing tax returns in certain foreign jurisdictions.

Equity in earnings, net of tax

Equity in earnings, net of tax represents our proportionate share of the earnings or losses from equity method investments as well as any gains or losses on the sale or disposal of such investments.

The following table shows equity in earnings, net of tax for the years ended December 31, 2019, 2018, and 2017:

	Years Ended			Change			
(Dollars in thousands)	2019	2018	2017	2019 over 2018		2018 over 2017	
Equity in earnings, net of tax	$ (284)	$ 34,620	$ 4,266	$ (34,904)	(101)%	$ 30,354	712%

Equity in earnings, net of tax decreased in 2019 compared to 2018 primarily due to the sale of our ownership interests in 8point3 Operating Company, LLC ("OpCo"), which resulted in a gain of $40.3 million, net of tax in 2018. See Note 8. "Consolidated Balance Sheet Details" to our consolidated financial statements for additional information.

Liquidity and Capital Resources

As of December 31, 2019, we believe that our cash, cash equivalents, marketable securities, cash flows from operating activities, contracts with customers for the future sale of solar modules, advanced-stage project pipeline, availability under our Revolving Credit Facility (considering the minimum liquidity covenant requirements therein), and access to the capital markets will be sufficient to meet our working capital, systems project investment, and capital expenditure needs for at least the next 12 months. We monitor our working capital to ensure we have adequate liquidity, both domestically and internationally.

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

As of December 31, 2019, we had $2.2 billion in cash, cash equivalents, and marketable securities compared to $2.5 billion as of December 31, 2018. Cash, cash equivalents, and marketable securities as of December 31, 2019 decreased primarily as a result of purchases of property, plant and equipment and operating expenditures associated with the initial ramp of certain Series 6 manufacturing lines. As of December 31, 2019 and 2018, $0.9 billion and $1.2 billion, respectively, of our cash, cash equivalents, and marketable securities was held by our foreign subsidiaries and was primarily based in U.S. dollar, Euro, and Japanese yen denominated holdings.

We utilize a variety of tax planning and financing strategies in an effort to ensure that our worldwide cash is available in the locations in which it is needed. If certain international funds were needed for our operations in the United States, we may be required to accrue and pay certain U.S. and foreign taxes to repatriate such funds. We maintain the intent and ability to permanently reinvest our accumulated earnings outside the United States, with the exception of our subsidiaries in Canada and Germany. In addition, changes to foreign government banking regulations may restrict our ability to move funds among various jurisdictions under certain circumstances, which could negatively impact our access to capital, resulting in an adverse effect on our liquidity and capital resources.

Our systems business requires significant liquidity and is expected to continue to have significant liquidity requirements in the future. The net amount of our project assets and related portion of deferred revenue, which approximates our net capital investment in the development and construction of systems projects, was $324.8 million as of December 31, 2019. Solar power project development cycles, which span the time between the identification of a site location and the commercial operation of a system, vary substantially and can take many years to mature. As a result of these long project cycles and strategic decisions to finance the development of certain projects using our working capital, we may need to make significant up-front investments of resources in advance of the receipt of any cash from the sale of such projects. Delays in construction or in completing the sale of our systems projects that we are self-financing may also impact our liquidity. In certain circumstances, we may need to finance construction costs exclusively using working capital, if project financing becomes unavailable due to market-wide, regional, or other concerns.

From time to time, we may develop projects in certain markets around the world where we may hold all or a significant portion of the equity in a project for several years. Given the duration of these investments and the currency risk relative to the U.S. dollar in some of these markets, we continue to explore local financing alternatives. Should these financing alternatives be unavailable or too cost prohibitive, we could be exposed to significant currency risk and our liquidity could be adversely impacted.

Additionally, we may elect to retain an ownership interest in certain systems projects after they become operational if we determine it would be of economic and strategic benefit to do so. If, for example, we cannot sell a systems project at economics that are attractive to us or potential customers are unwilling to assume the risks and rewards typical of

PV solar power system ownership, we may instead elect to temporarily own and operate such systems project until we can sell it on economically attractive terms. The decision to retain ownership of a system impacts our liquidity depending upon the size and cost of the project. As of December 31, 2019, we had $477.0 million of net PV solar power systems that had been placed in service, primarily in international markets. We have elected, and may in the future elect, to enter into temporary or long-term project financing to reduce the impact on our liquidity and working capital with regards to such projects and systems. We may also consider entering into tax equity or other arrangements with respect to ownership interests in certain of our projects, which could cause a portion of the economics of such projects to be realized over time.

The following additional considerations have impacted or may impact our liquidity in 2020 and beyond:

- During 2020, we expect to spend $450 million to $550 million for capital expenditures, including amounts related to the conversion of our second manufacturing facility in Kulim, Malaysia from Series 4 to Series 6 module technology and upgrades to other machinery and equipment, which we believe will further increase our module wattage and/or production cost structure.

- As described above, in January 2020, we entered into an MOU to settle a class action lawsuit filed in the Arizona District Court. Pursuant to the MOU, among other things, we agreed to pay a total of $350 million to settle the claims in the lawsuit in exchange for mutual releases and dismissal with prejudice of the complaint upon court approval of the settlement. In February 2020, we subsequently entered into a Stipulation and Agreement of Settlement (the "Settlement Agreement") with certain named plaintiffs on terms and conditions that were consistent with the MOU. Pursuant to the Settlement Agreement, among other things, (i) we contributed $350 million in cash to a settlement fund that will be used to pay all settlement fees and expenses, attorneys' fees and expenses, and cash payments to members of the settlement class and (ii) the settlement class has agreed to release us, the other defendants named in the class action, and certain of their respective related parties from any and all claims concerning, based on, arising out of, or in connection with the class action. The Settlement Agreement contained no admission of liability, wrongdoing, or responsibility by any of the parties.

  The settlement, including such payment and release described above, is subject to court approval. If the court preliminarily approves the settlement, members of the settlement class will be provided notice of, and an opportunity to object to, the settlement at a fairness hearing to be held by the court to determine whether the settlement should be finally approved and whether the proposed order and final judgment should be entered. If the court approves the settlement and enters such order and final judgment, and such judgment is no longer subject to further appeal or other review, the settlement fund will be disbursed in accordance with a plan of allocation approved by the court and the release will be effective to all members of the settlement class.

- Our failure to obtain raw materials and components that meet our quality, quantity, and cost requirements in a timely manner could interrupt or impair our ability to manufacture our solar modules or increase our manufacturing costs. Accordingly, we may enter into long-term supply agreements to mitigate potential risks related to the procurement of key raw materials and components, and such agreements may be noncancelable or cancelable with a significant penalty. For example, we have entered into long-term supply agreements for the purchase of certain specified minimum volumes of substrate glass and cover glass for our PV solar modules. Our actual purchases under these supply agreements are expected to be approximately $2.4 billion of substrate glass and $500 million of cover glass. We have the right to terminate these agreements upon payment of specified termination penalties (which are up to $430 million in the aggregate and decline over time during the respective supply periods).

- The balance of our solar module inventories and BoS parts was $349.1 million as of December 31, 2019. As we continue to develop our advanced-stage project pipeline, we must produce solar modules in volumes sufficient to support our planned construction schedules. As part of this construction cycle, we typically produce these inventories in advance of receiving payment for such materials, which may temporarily reduce our

liquidity. Once solar modules and BoS parts are installed in a project, they are classified as either project assets, PV solar power systems, or cost of sales depending on whether the project is subject to a definitive sales contract and whether other revenue recognition criteria have been met. We also produce significant volumes of modules for sale directly to third-parties, which requires us to carry inventories at levels sufficient to satisfy the demand of our customers and the needs of their projects, which may also temporarily reduce our liquidity.

- We may commit significant working capital over the next several years to advance the construction of various U.S. systems projects or procure the associated modules or BoS parts, by specified dates, for such projects to qualify for certain federal investment tax credits. Among other requirements, such credits require projects to have commenced construction in 2019, which may have been achieved by certain qualifying procurement activities, to receive a 30% investment tax credit. Such credits will step down to 26% for projects that commence construction in 2020, and will further step down to 22% for projects that commence construction in 2021 and 10% for projects that commence construction thereafter.

- We may also commit working capital to acquire solar power projects in various stages of development, including advanced-stage projects with PPAs, and to continue developing those projects, as necessary. Depending upon the size and stage of development, the costs to acquire such solar power projects could be significant. When evaluating project acquisition opportunities, we consider both the strategic and financial benefits of any such acquisitions.

Cash Flows

The following table summarizes key cash flow activity for the years ended December 31, 2019, 2018, and 2017 (in thousands):

	2019	2018	2017
Net cash provided by (used in) operating activities	$ 174,201	$ (326,809)	$ 1,340,677
Net cash used in investing activities	(362,298)	(682,714)	(626,802)
Net cash provided by financing activities	74,943	255,228	192,045
Effect of exchange rate changes on cash, cash equivalents and restricted cash	(2,959)	(13,558)	8,866
Net (decrease) increase in cash, cash equivalents and restricted cash	$ (116,113)	$ (767,853)	$ 914,786

Operating Activities

The increase in net cash provided by operating activities during 2019 was primarily driven by higher cash proceeds from sales of systems projects, including the Sunshine Valley, Sun Streams, and California Flats projects, and advance payments received for sales of solar modules prior to the step down in the U.S. investment tax credit as discussed above. These increases were partially offset by operating expenditures associated with initial ramp of certain Series 6 manufacturing lines and expenditures for the construction of certain projects.

Investing Activities

The decrease in net cash used in investing activities during 2019 was primarily due to higher net sales of marketable securities and restricted investments, partially offset by proceeds associated with the sale of our interests in 8point3 and its subsidiaries in 2018.

Financing Activities

The decrease in net cash provided by financing activities during 2019 was primarily the result of lower net proceeds from borrowings under project specific debt financings associated with the construction of certain projects in Australia, Japan, and India.

Contractual Obligations

The following table presents the payments due by fiscal year for our outstanding contractual obligations as of December 31, 2019 (in thousands):

		Payments Due by Year			
	Total	Less Than 1 Year	1 - 3 Years	3 - 5 Years	More Than 5 Years
Long-term debt obligations	$ 482,892	$ 17,684	$ 98,571	$ 37,496	$ 329,141
Interest payments (1)	168,040	17,276	29,533	27,409	93,822
Operating lease obligations	162,913	15,153	28,771	26,708	92,281
Purchase obligations (2)	1,424,267	900,200	221,888	187,277	114,902
Recycling obligations	137,761	—	—	—	137,761
Contingent consideration (3)	6,895	2,395	4,500	—	—
Transition tax obligations (4)	76,667	6,620	14,747	32,259	23,041
Other obligations (5)	10,527	2,933	5,164	2,430	—
Total	$ 2,469,962	$ 962,261	$ 403,174	$ 313,579	$ 790,948

(1) Includes estimated cash interest to be paid over the remaining terms of the underlying debt. Interest payments are based on fixed and floating rates as of December 31, 2019.

(2) Purchase obligations represent agreements to purchase goods or services, including open purchase orders and contracts with fixed volume commitments, that are noncancelable or cancelable with a significant penalty. Purchase obligations for our long-term supply agreements for the purchase of substrate glass and cover glass represent specified termination penalties, which are up to $430 million in the aggregate under the agreements. Our actual purchases under these supply agreements are expected to be approximately $2.4 billion of substrate glass and $500 million of cover glass.

(3) In connection with business or project acquisitions, we may agree to pay additional amounts to the selling parties upon achievement of certain milestones. See Note 14. “Commitments and Contingencies” to our consolidated financial statements for further information.

(4) Transition tax obligations represent estimated payments for U.S. federal taxes associated with accumulated earnings and profits of our foreign corporate subsidiaries. See Note 18. “Income Taxes” to our consolidated financial statements for further information.

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

We have excluded $72.2 million of unrecognized tax benefits from the amounts presented above as the timing of such obligations is uncertain.

Off-Balance Sheet Arrangements

As of December 31, 2019, we had no off-balance sheet debt or similar obligations, other than financial assurance related instruments and operating leases, which are not classified as debt. We do not guarantee any third-party debt. See Note 14. “Commitments and Contingencies” to our consolidated financial statements for further information about our financial assurance related instruments.

Recent Accounting Pronouncements

See Note 3. “Recent Accounting Pronouncements” to our consolidated financial statements for a summary of recent accounting pronouncements.

Critical Accounting Estimates

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

Revenue Recognition – Solar Power System Sales and/or EPC Services. We generally recognize revenue for sales of solar power systems and/or EPC services over time as our performance creates or enhances an energy generation asset controlled by the customer. Furthermore, the sale of a solar power system combined with EPC services represents a single performance obligation for the development and construction of a single generation asset. For such arrangements, we recognize revenue and gross profit as work is performed using cost based input methods, through which we determine our progress toward contract completion based on the relationship between actual costs incurred and total estimated costs (including solar module costs) of the contract. Such revenue recognition is also dependent, in part, on our customers' commitment to perform their obligations under the contract, which is typically measured through the receipt of cash deposits or other forms of financial security issued by creditworthy financial institutions or parent entities. For sales of solar power systems 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 noncontrolling interest we obtained, and defer any profit associated with the interest obtained through "Equity in earnings, net of tax." We may also recognize revenue for the sale of a solar power system after it has been completed due to the timing of when we enter into the associated sales contract with the customer.

Estimating the fair value of a noncontrolling interest we obtain begins with the valuation of the entire solar project (i.e., solar power system) being sold to the customer. Such valuation generally uses an income based valuation technique in which relevant cash flows are discounted to estimate the expected economic earnings capacity of the project. Typical factors considered in a project's valuation include expected energy generation, the duration and pricing of the PPA, the pricing of energy to be sold on an open contract basis following the termination of the PPA (i.e., merchant pricing curves), other off-take agreements, the useful life of the system, tax attributes such as accelerated depreciation and tax credits, sales of renewable energy certificates, interconnection rights, operating agreements, and the cost of capital. Once the overall project valuation is agreed upon with the customer, we determine the relative value related to our specific ownership interests conveyed through the transaction agreements, including the membership interest purchase and sale agreement and the limited liability company agreement (or equivalent) of the project or its holding company.

Cost based input methods of revenue recognition are considered a faithful depiction of our efforts to satisfy long-term construction contracts and therefore reflect the transfer of goods to a customer under such contracts. Costs incurred that do not contribute to satisfying our performance obligations ("inefficient costs") are excluded from our input methods of revenue recognition as the amounts are not reflective of our transferring control of the system to the customer. Costs incurred toward contract completion may include costs associated with solar modules, direct materials, labor, subcontractors, and other indirect costs related to contract performance. We recognize solar module and direct material costs as incurred when such items have been installed in a system.

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 the estimated total costs on any contract,

including any inefficient costs, are greater than the net contract revenues, 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 or costs to complete contracts are recorded in the period in which the revisions to estimates are identified and the amounts can be reasonably estimated. The effect of the changes on future periods are recognized as if the revised estimates had been used since revenue was initially recognized under the contract. Such revisions could occur in any reporting period, and the effects may be material depending on the size of the contracts or the changes in estimates.

As part of our solar power system sales, we conduct performance testing of a system prior to substantial completion to confirm the system meets its operational and capacity expectations noted in the EPC agreement. In addition, we may provide an energy performance test during the first or second year of a system's operation to demonstrate that the actual energy generation for the applicable period meets or exceeds the modeled energy expectation, after certain adjustments. These tests are based on meteorological, energy, and equipment performance data measured at the system's location as well as certain projections of such data over the remaining measurement period. In certain instances, a bonus payment may be received at the end of the applicable test period if the system performs above a specified level. Conversely, if there is an underperformance event with regards to these tests, we may incur liquidated damages as a percentage of the EPC contract price. Such performance guarantees represent a form of variable consideration and are estimated at contract inception at their most likely amount and updated at the end of each reporting period as additional performance data becomes available and only to the extent that it is probable that a significant reversal of any incremental revenue will not occur.

Revenue Recognition – Operations and Maintenance. We recognize revenue for standard, recurring O&M services over time as customers receive and consume the benefits of such services. Costs of O&M services are expensed in the period in which they are incurred. As part of our O&M service offerings, we typically offer an effective availability guarantee, which stipulates that a system will be available to generate a certain percentage of total possible energy during a specific period after adjusting for factors outside our control as the service provider. These tests are based on meteorological, energy, and equipment performance data measured at the system's location as well as certain projections of such data over the remaining measurement period. If system availability exceeds a contractual threshold, we may receive a bonus payment, or if system availability falls below a separate threshold, we may incur liquidated damages for certain lost energy under the PPA. Such bonuses or liquidated damages represent a form of variable consideration and are estimated and recognized over time as customers receive and consume the benefits of the O&M services.

Accrued Solar Module Collection and Recycling Liability. When applicable, we recognize expense at the time of sale for the estimated cost of our obligations to collect and recycle solar modules covered by our solar module collection and recycling program. We estimate the cost of our collection and recycling obligations based on the present value of the expected probability-weighted future cost of collecting and recycling the solar modules, which includes estimates for the cost of packaging materials; the cost of freight from the solar module installation sites to a recycling center; material, labor, and capital costs; the scale of recycling centers; and an estimated third-party profit margin and return on risk for collection and recycling services. We base these estimates on (i) our experience collecting and recycling our solar modules, (ii) the expected timing of when our solar modules will be returned for recycling, and (iii) the expected economic factors at the time the solar modules will be collected and recycled. In the periods between the time of sale and the related settlement of the collection and recycling obligation, we accrete the carrying amount of the associated liability by applying the discount rate used for its initial measurement. We periodically review our estimates of expected future recycling costs and may adjust our liability accordingly.

Product Warranties. We provide a limited PV solar module warranty covering defects in materials and workmanship under normal use and service conditions for approximately 10 years. We also typically warrant that modules installed in accordance with agreed-upon specifications will produce at least 98% of their labeled power output rating during the first year, with the warranty coverage reducing by 0.5% every year thereafter throughout the approximate 25-year limited power output warranty period.

As an alternative form of our standard limited module power output warranty, we also offer an aggregated or system-level limited module performance warranty. This system-level limited module performance warranty is designed for

utility-scale systems and provides 25-year system-level energy degradation protection. This warranty represents a practical expedient to address the challenge of identifying, from the potential millions of modules installed in a utility-scale system, individual modules that may be performing below warranty thresholds by focusing on the aggregate energy generated by the system rather than the power output of individual modules. The system-level limited module performance warranty is typically calculated as a percentage of a system's expected energy production, adjusted for certain actual site conditions, with the warranted level of performance declining each year in a linear fashion, but never falling below 80% during the term of the warranty.

In addition to our limited solar module warranties described above, for PV solar power systems we construct, we typically provide limited warranties for defects in engineering design, installation, and BoS part workmanship for a period of one to two years following the substantial completion of a system or a block within the system.

When we recognize revenue for module or system sales, we accrue liabilities for the estimated future costs of meeting our limited warranty obligations. We make and revise these estimates based primarily on the number of our solar modules under warranty installed at customer locations, our historical experience with and projections of warranty claims, and our estimated per-module replacement costs. We also monitor our expected future module performance through certain quality and reliability testing and actual performance in certain field installation sites. In general, we expect the return rates for our newer series of module technology to be lower than our older series. We estimate that the return rate for such newer series of module technology will be less than 1%.

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

In preparing our consolidated financial statements, we calculate our income tax provision based on our interpretation of the tax laws and regulations in the various jurisdictions where we conduct business. This requires us to estimate our current tax obligations, assess uncertain tax positions, and assess temporary differences between the financial statement carrying amounts and the tax basis of assets and liabilities. These temporary differences result in deferred tax assets and liabilities. We must also assess the likelihood that each of our deferred tax assets will be realized. To the extent we believe that realization of any of our deferred tax assets is not more likely than not, we establish a valuation allowance. When we establish a valuation allowance or increase this allowance in a reporting period, we generally record a corresponding tax expense. Conversely, to the extent circumstances indicate that a valuation allowance is no longer necessary, that portion of the valuation allowance is reversed, which generally reduces our overall income tax expense.

We establish liabilities for potential additional taxes based on our assessment of the outcome of our tax positions. Once established, we adjust these liabilities when additional information becomes available or when an event occurs requiring an adjustment. Significant judgment is required in making these estimates and the actual cost of a tax assessment, fine, or penalty may ultimately be materially different from our recorded liabilities, if any.

We continually explore initiatives to better align our tax and legal entity structure with the footprint of our global operations and recognize the tax impact of these initiatives, including changes in the assessment of uncertain tax positions, indefinite reinvestment exception assertions, and the realizability of deferred tax assets, in the period when we believe all necessary internal and external approvals associated with such initiatives have been obtained, or when the initiatives are materially complete.

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

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

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

Foreign Currency Exchange Risk

Cash Flow Exposure. We expect certain of our subsidiaries to have future cash flows that will be denominated in currencies other than the subsidiaries' functional currencies. Changes in the exchange rates between the functional currencies of our subsidiaries and the other currencies in which they transact will cause fluctuations in the cash flows we expect to receive or pay when these cash flows are realized or settled. Accordingly, we enter into foreign exchange forward contracts to hedge a portion of these forecasted cash flows. These foreign exchange forward contracts qualify for accounting as cash flow hedges in accordance with ASC 815 and we designated them as such. We initially report the effective portion of a derivative's unrealized gain or loss in "Accumulated other comprehensive loss" and subsequently reclassify amounts into earnings when the hedged transaction occurs and impacts earnings. For additional details on our derivative hedging instruments and activities, see Note 9. "Derivative Financial Instruments" to our consolidated financial statements.

Certain of our international operations, such as our manufacturing facilities in Malaysia and Vietnam, pay a portion of their operating expenses, including associate wages and utilities, in local currencies, which exposes us to foreign currency exchange risk for such expenses. Our manufacturing facilities are also exposed to foreign currency exchange risk for purchases of certain equipment from international vendors. As we expand into new markets worldwide, particularly emerging markets, our total foreign currency exchange risk, in terms of both size and exchange rate volatility, and the number of foreign currencies we are exposed to could increase significantly.

For the year ended December 31, 2019, 8% of our net sales were denominated in foreign currencies, including Australian dollar and Euro. As a result, we have exposure to foreign currencies with respect to our net sales, which has historically represented one of our primary foreign currency exchange risks. A 10% change in the U.S. dollar to Australian dollar and U.S dollar to Euro exchange rates would have had an aggregate impact on our net sales of $18.0 million, excluding the effect of our hedging activities.

Transaction Exposure. Many of our subsidiaries have assets and liabilities (primarily cash, receivables, marketable securities, deferred taxes, payables, accrued expenses, and solar module collection and recycling liabilities) that are denominated in currencies other than the subsidiaries' functional currencies. Changes in the exchange rates between the functional currencies of our subsidiaries and the other currencies in which these assets and liabilities are denominated will create fluctuations in our reported consolidated statements of operations and cash flows. We may enter into foreign exchange forward contracts or other financial instruments to economically hedge assets and liabilities against the effects of currency exchange rate fluctuations. The gains and losses on such foreign exchange forward contracts will economically offset all or part of the transaction gains and losses that we recognize in earnings on the related foreign currency denominated assets and liabilities. For additional details on our economic hedging instruments and activities, see Note 9. "Derivative Financial Instruments" to our consolidated financial statements.

As of December 31, 2019, a 10% change in the U.S. dollar relative to our primary foreign currency exposures would not have had a significant impact to our net foreign currency income or loss, including the effect of our hedging activities.

Interest Rate Risk

Variable Rate Debt Exposure. We are exposed to interest rate risk as certain of our project specific debt financings have variable interest rates, exposing us to variability in interest expense and cash flows. See Note 13. "Debt" to our consolidated financial statements for additional information on our long-term debt borrowing rates. An increase in relevant interest rates would increase the cost of borrowing under certain of our project specific debt financings. If such variable interest rates changed by 100 basis points, our interest expense for the year ended December 31, 2019 would have changed by $1.1 million, including the effect of our hedging activities.

Customer Financing Exposure. We are also indirectly exposed to interest rate risk because many of our customers depend on debt financings to purchase modules or systems. An increase in interest rates could make it challenging for our customers to obtain the capital necessary to make such purchases on favorable terms, or at all. Such factors could reduce demand or lower the price we can charge for our modules and systems, thereby reducing our net sales and gross profit. In addition, we believe that a significant percentage of our customers purchase systems as an investment, funding the initial capital expenditure through a combination of equity and debt. An increase in interest rates could lower an investor's return on investment in a system or make alternative investments more attractive relative to PV solar power systems, which, in either case, could cause these end-users to seek alternative investments with higher risk-adjusted returns.

Marketable Securities and Restricted Investments Exposure. We invest in various debt securities, which exposes us to interest rate risk. The primary objectives of our investment activities are to preserve principal and provide liquidity, while at the same time maximizing the return on our investments. Many of the securities in which we invest may be subject to market risk. Accordingly, a change in prevailing interest rates may cause the market value of such investments to fluctuate. For example, if we hold a security that was issued with an interest rate fixed at the then-prevailing rate and the prevailing interest rate subsequently rises, the market value of our investment may decline.

For the year ended December 31, 2019, our marketable securities earned a return of 3%, including the impact of fluctuations in the price of the underlying securities, and had a weighted-average maturity of 5 months as of the end of the period. Based on our investment positions as of December 31, 2019, a hypothetical 100 basis point change in interest rates would have resulted in a $3.2 million change in the market value of our investment portfolio. For the year ended December 31, 2019, our restricted investments earned a return of 12%, including the impact of fluctuations in the price of the underlying securities, and had a weighted-average maturity of approximately 16 years as of the end of the period. Based on our restricted investment positions as of December 31, 2019, a hypothetical 100 basis point change in interest rates would have resulted in a $36.1 million change in the market value of our restricted investment portfolio.

Commodity and Component Risk

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

Credit Risk

We have certain financial and derivative instruments that subject us to credit risk. These consist primarily of cash, cash equivalents, marketable securities, accounts receivable, restricted cash and investments, notes receivable, and foreign exchange forward contracts. We are exposed to credit losses in the event of nonperformance by the counterparties to our financial and derivative instruments. We place cash, cash equivalents, marketable securities, restricted cash and investments, and foreign exchange forward contracts with various high-quality financial institutions and limit the amount of credit risk from any one counterparty. We continuously evaluate the credit standing of our counterparty financial institutions. We monitor the financial condition of our customers and perform credit evaluations whenever considered necessary. Depending upon the sales arrangement, we may require some form of payment security from our customers, including advance payments, parent guarantees, bank guarantees, surety bonds, or commercial letters of credit. We also have PPAs that subject us to credit risk in the event our off-take counterparties are unable to fulfill their contractual obligations, which may adversely affect our project assets and certain receivables. Accordingly, we closely monitor the credit standing of existing and potential off-take counterparties to limit such risks.

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

Consolidated Financial Statements

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

Selected Quarterly Financial Data (Unaudited)

The following selected quarterly financial data should be read in conjunction with our consolidated financial statements and the related notes thereto and Item 7. “Management’s Discussion and Analysis of Financial Condition and Results of Operations.” This information has been derived from our unaudited consolidated financial statements that, in our opinion, reflect all recurring adjustments necessary to fairly present the information when read in conjunction with our consolidated financial statements. The results of operations for any quarter are not necessarily indicative of the results to be expected for any future period.

	Quarters Ended							
	Dec 31, 2019	Sep 30, 2019	Jun 30, 2019	Mar 31, 2019	Dec 31, 2018	Sep 30, 2018	Jun 30, 2018	Mar 31, 2018
	(In thousands, except per share amounts)							
Net sales	$ 1,399,377	$ 546,806	$ 584,956	$ 531,978	$ 691,241	$ 676,220	$ 309,318	$ 567,265
Gross profit (loss)	333,555	138,363	77,182	112	98,310	129,127	(8,058)	172,798
Production start-up	7,351	18,605	10,437	9,522	14,576	14,723	24,352	37,084
Litigation loss	363,000	—	—	—	—	—	—	—
Operating (loss) income	(117,866)	41,304	(8,584)	(76,639)	11,008	58,475	(103,634)	74,264
Net (loss) income	(59,408)	30,622	(18,548)	(67,599)	52,116	57,750	(48,491)	82,951
Net (loss) income per share:								
Basic	$ (0.56)	$ 0.29	$ (0.18)	$ (0.64)	$ 0.50	$ 0.55	$ (0.46)	$ 0.79
Diluted	$ (0.56)	$ 0.29	$ (0.18)	$ (0.64)	$ 0.49	$ 0.54	$ (0.46)	$ 0.78

Item 9. ***Changes in and Disagreements with Accountants on Accounting and Financial Disclosure***

None.

Item 9A. ***Controls and Procedures***

Evaluation of Disclosure Controls and Procedures

We carried out an evaluation, under the supervision and with the participation of management, including our Chief Executive Officer and Chief Financial Officer, of the effectiveness of our “disclosure controls and procedures” as defined in Exchange Act Rule 13a-15(e) and 15d-15(e). Based on that evaluation, our Chief Executive Officer and Chief Financial Officer concluded that as of December 31, 2019 our disclosure controls and procedures were effective to ensure that information required to be disclosed by us in reports that we file or submit under the Exchange Act is recorded, processed, summarized, and reported within the time periods specified in SEC rules and forms, and that such information is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure.

Management’s Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate “internal control over financial reporting,” as defined in Exchange Act Rule 13a-15(f) and 15d-15(f). We also carried out an evaluation, under the supervision and with the participation of management, including our Chief Executive Officer and Chief Financial Officer, of the

effectiveness of our internal control over financial reporting as of December 31, 2019 based on the criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO"). Our internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with U.S. GAAP. Based on such evaluation, our management concluded that our internal control over financial reporting was effective as of December 31, 2019. The effectiveness of our internal control over financial reporting as of December 31, 2019 has also been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in its report which appears herein.

Changes in Internal Control over Financial Reporting

We also carried out an evaluation, under the supervision and with the participation of management, including our Chief Executive Officer and Chief Financial Officer, of our "internal control over financial reporting" to determine whether any changes in our internal control over financial reporting occurred during the quarter ended December 31, 2019 that materially affected, or are reasonably likely to materially affect, our internal control over financial reporting. Based on that evaluation, there were no such changes in our internal control over financial reporting that occurred during the quarter ended December 31, 2019.

Limitations on the Effectiveness of Controls

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

Item 9B. *Other Information*

None.

PART III

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

For information with respect to our executive officers, see Item 1. "Business – Information about Our Executive Officers." Information concerning our board of directors and audit committee of our board of directors will appear in our 2020 Proxy Statement, under the sections "Directors" and "Corporate Governance," and information concerning Section 16(a) beneficial ownership reporting compliance will appear in our 2020 Proxy Statement under the section "Section 16(a) Beneficial Ownership Reporting Compliance." We have adopted a Code of Business Conduct and Ethics that applies to all directors, officers, and associates of First Solar. Information concerning this code will appear in our 2020 Proxy Statement under the section "Corporate Governance." The information in such sections of the Proxy Statement is incorporated by reference into this Annual Report on Form 10-K.

Item 11. ***Executive Compensation***

Information concerning executive compensation and related information will appear in our 2020 Proxy Statement under the section "Executive Compensation," and information concerning the compensation committee of our board of directors (the "compensation committee") will appear under the sections "Corporate Governance" and "Compensation Committee Report." The information in such sections of the 2020 Proxy Statement is incorporated by reference into this Annual Report on Form 10-K.

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

Information concerning the security ownership of certain beneficial owners and management and related stockholder matters, including certain information regarding our equity compensation plans, will appear in our 2020 Proxy Statement under the section "Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters." The information in such section of the Proxy Statement is incorporated by reference into this Annual Report on Form 10-K.

Equity Compensation Plans

The following table sets forth certain information as of December 31, 2019 concerning securities authorized for issuance under our equity compensation plans:

Plan Category	Number of Securities to be Issued Upon Exercise of Outstanding Options and Rights (a)(1)	Weighted-Average Exercise Price of Outstanding Options and Rights (b)(2)	Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (Excluding Securities Reflected in Column (a)) (c)(3)
Equity compensation plans approved by stockholders	2,411,436	$ —	3,039,630
Equity compensation plans not approved by stockholders	—	—	—
Total	2,411,436	$ —	3,039,630

(1) Includes 2,411,436 shares issuable upon vesting of restricted stock units ("RSUs") granted under our 2015 Omnibus Incentive Compensation Plan.

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

(3) Includes 515,288 shares of common stock reserved for future issuance under our stock purchase plan for employees.

See Note 17. “Share-Based Compensation” to our consolidated financial statements for further discussion on our equity compensation plans.

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

Information concerning certain relationships and related party transactions will appear in our 2020 Proxy Statement under the section “Certain Relationships and Related Party Transactions,” and information concerning director independence will appear in our 2020 Proxy Statement under the section “Corporate Governance.” The information in such sections of the Proxy Statement is incorporated by reference into this Annual Report on Form 10-K.

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

Information concerning principal accounting fees and services and the audit committee of our board of directors’ pre-approval policies and procedures for these items will appear in our 2020 Proxy Statement under the section “Principal Accounting Fees and Services.” The information in such section of the Proxy Statement is incorporated by reference into this Annual Report on Form 10-K.

PART IV

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

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

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

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

(c) *Financial Statement Schedules*. All financial statement schedules have been omitted as the required information is not applicable or is not material to require presentation of the schedule, or because the information required is included in the consolidated financial statements and notes thereto of this Annual Report on Form 10-K.

Report of Independent Registered Public Accounting Firm

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

Opinions on the Financial Statements and Internal Control over Financial Reporting

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

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

Basis for Opinions

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

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

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

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance

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

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

Critical Audit Matters

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

Solar Module Collection and Recycling Liability

As described in Note 12 to the consolidated financial statements, certain of the Company's legacy sales were covered by a module collection and recycling program, which was previously established to collect and recycle modules sold and covered under such program once the modules reach the end of their useful lives. The Company's accrued solar module collection and recycling liability was $137.8 million as of December 31, 2019. Management estimates the cost of collection and recycling obligations based on the present value of the expected probability-weighted future cost of collecting and recycling the solar modules, which includes estimates for the cost of packaging materials; the cost of freight from the solar module installation sites to a recycling center; material, labor, and capital costs; by-product credits for certain materials recovered during the recycling process; and an estimated third-party profit margin and return on risk for collection and recycling services. Management bases these estimates on experience collecting and recycling the solar modules and certain assumptions regarding costs at the time the solar modules will be collected and recycled.

The principal considerations for our determination that performing procedures relating to the solar module collection and recycling liability is a critical audit matter are there was significant judgment by management when developing the estimated costs of this program. This in turn led to a high degree of auditor judgment, subjectivity, and effort in performing procedures to evaluate management's expected probability-weighted future cost of collecting and recycling the solar modules and significant assumptions, including the cost of freight from the solar module installation sites to a recycling center, capital costs, present value assumptions, by-product credits for certain materials recovered during the recycling process, and the assumption regarding costs at the time the solar modules will be collected and recycled, and evaluating audit evidence related to the results of those procedures.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to valuation of the solar module collection and recycling liability. These procedures also included, among others, testing management's process for developing the expected probability-weighted future cost of collecting and recycling the solar modules, including evaluating the reasonableness of the significant assumptions used by management, including the cost of freight from the solar module installation sites to a recycling center, capital costs,

present value assumptions, by-product credits for certain materials recovered during the recycling process, and the assumption regarding costs at the time the solar modules will be collected and recycled. Evaluating the reasonableness of the significant assumptions involved (i) testing actual recycling costs incurred, (ii) obtaining and evaluating evidence from third parties, and (iii) evaluating other underlying input data considered by management in the development of its recycling liability.

Product Warranty Liability

As described in Notes 2 and 14 to the consolidated financial statements, the Company provides a limited PV solar module warranty which covers defects in materials and workmanship for approximately 10 years and warrants that modules will produce at least a specified minimum percentage of their labeled power output rating, on either an individual module or system-level basis, for approximately 25 years. The Company's product warranty liability was $129.8 million as of December 31, 2019. Product warranty estimates are based primarily on the number of solar modules under warranty installed at customer locations, historical experience with and projections of warranty claims, and estimated per-module replacement costs.

The principal considerations for our determination that performing procedures relating to the product warranty liability is a critical audit matter are there was significant judgment by management in estimating the projections of warranty claims. This in turn led to a high degree of auditor judgment, subjectivity, and effort in performing procedures to evaluate the projections of warranty claims and related audit evidence. In addition, the audit effort involved the use of professionals with specialized skill and knowledge to assist in performing these procedures and evaluating the audit evidence obtained from these procedures.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to valuation of the product warranty liability. These procedures also included, among others, testing the appropriateness of the methodology used and the reasonableness of the significant assumptions used by management in developing these estimates, including projections of warranty claims. Evaluating whether the significant assumptions relating to the product warranty liability was reasonable involved (i) testing historical warranty claims and settlements, (ii) evaluating the reasonableness and appropriateness of factors considered by management in estimating the final settlement of open customer claims, and (iii) evaluating the reasonableness and appropriateness of the methodology used by management to determine return rates used in the valuation of the product warranty liability. Professionals with specialized skill and knowledge were used to assist in the evaluation of the reasonableness and appropriateness of the methodology.

/s/ PricewaterhouseCoopers LLP

Phoenix, Arizona
February 20, 2020

We have served as the Company's or its predecessor's auditor since 2000, which includes periods before the Company became subject to SEC reporting requirements.

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

	December 31,	
	2019	2018
ASSETS		
Current assets:		
Cash and cash equivalents	$ 1,352,741	$ 1,403,562
Marketable securities	811,506	1,143,704
Accounts receivable trade, net	475,039	128,282
Accounts receivable, unbilled and retainage	183,473	458,166
Inventories	443,513	387,912
Balance of systems parts	53,583	56,906
Project assets	3,524	37,930
Prepaid expenses and other current assets	276,455	243,061
Total current assets	3,599,834	3,859,523
Property, plant and equipment, net	2,181,149	1,756,211
PV solar power systems, net	476,977	308,640
Project assets	333,596	460,499
Deferred tax assets, net	130,771	77,682
Restricted cash and investments	303,857	318,390
Goodwill	14,462	14,462
Intangible assets, net	64,543	74,162
Inventories	160,646	130,083
Notes receivable, affiliate	—	22,832
Other assets	249,854	98,878
Total assets	$ 7,515,689	$ 7,121,362
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 218,081	$ 233,287
Income taxes payable	17,010	20,885
Accrued expenses	351,260	441,580
Current portion of long-term debt	17,510	5,570
Deferred revenue	323,217	129,755
Accrued litigation	363,000	—
Other current liabilities	28,130	14,380
Total current liabilities	1,318,208	845,457
Accrued solar module collection and recycling liability	137,761	134,442
Long-term debt	454,187	461,221
Other liabilities	508,766	467,839
Total liabilities	2,418,922	1,908,959
Commitments and contingencies		
Stockholders' equity:		
Common stock, $0.001 par value per share; 500,000,000 shares authorized; 105,448,921 and 104,885,261 shares issued and outstanding at December 31, 2019 and 2018, respectively	105	105
Additional paid-in capital	2,849,376	2,825,211
Accumulated earnings	2,326,620	2,441,553
Accumulated other comprehensive loss	(79,334)	(54,466)
Total stockholders' equity	5,096,767	5,212,403
Total liabilities and stockholders' equity	$ 7,515,689	$ 7,121,362

See accompanying notes to these consolidated financial statements.

FIRST SOLAR, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF OPERATIONS
(In thousands, except per share amounts)

	Years Ended December 31,		
	2019	2018	2017
Net sales	$ 3,063,117	$ 2,244,044	$ 2,941,324
Cost of sales	2,513,905	1,851,867	2,392,377
Gross profit	549,212	392,177	548,947
Operating expenses:			
Selling, general and administrative	205,471	176,857	202,699
Research and development	96,611	84,472	88,573
Production start-up	45,915	90,735	42,643
Litigation loss	363,000	—	—
Restructuring and asset impairments	—	—	37,181
Total operating expenses	710,997	352,064	371,096
Operating (loss) income	(161,785)	40,113	177,851
Foreign currency income (loss), net	2,291	(570)	(9,640)
Interest income	48,886	59,788	35,704
Interest expense, net	(27,066)	(25,921)	(25,765)
Other income, net	17,545	39,737	23,965
(Loss) income before taxes and equity in earnings	(120,129)	113,147	202,115
Income tax benefit (expense)	5,480	(3,441)	(371,996)
Equity in earnings, net of tax	(284)	34,620	4,266
Net (loss) income	$ (114,933)	$ 144,326	$ (165,615)
Net (loss) income per share:			
Basic	$ (1.09)	$ 1.38	$ (1.59)
Diluted	$ (1.09)	$ 1.36	$ (1.59)
Weighted-average number of shares used in per share calculations:			
Basic	105,310	104,745	104,328
Diluted	105,310	106,113	104,328

See accompanying notes to these consolidated financial statements.

FIRST SOLAR, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(In thousands)

	Years Ended December 31,		
	2019	2018	2017
Net (loss) income	$ (114,933)	$ 144,326	$ (165,615)
Other comprehensive (loss) income:			
Foreign currency translation adjustments	(7,049)	(1,034)	11,832
Unrealized (loss) gain on marketable securities and restricted investments, net of tax of $3,046, $3,735, and $(588)	(15,670)	(57,747)	3,217
Unrealized (loss) gain on derivative instruments, net of tax of $142, $(996), and $1,396	(2,149)	2,056	(2,883)
Other comprehensive (loss) income	(24,868)	(56,725)	12,166
Comprehensive (loss) income	$ (139,801)	$ 87,601	$ (153,449)

See accompanying notes to these consolidated financial statements.

FIRST SOLAR, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(In thousands)

	Common Stock		Additional Paid-In Capital	Accumulated Earnings	Accumulated Other Comprehensive (Loss) Income	Total Equity
	Shares	Amount				
Balance at December 31, 2016	104,035	$ 104	$ 2,765,310	$ 2,462,842	$ (9,907)	$ 5,218,349
Net loss	—	—	—	(165,615)	—	(165,615)
Other comprehensive income	—	—	—	—	12,166	12,166
Common stock issued for share-based compensation	580	—	4,474	—	—	4,474
Tax withholding related to vesting of restricted stock	(147)	—	(5,137)	—	—	(5,137)
Share-based compensation expense	—	—	34,460	—	—	34,460
Balance at December 31, 2017	104,468	104	2,799,107	2,297,227	2,259	5,098,697
Net income	—	—	—	144,326	—	144,326
Other comprehensive loss	—	—	—	—	(56,725)	(56,725)
Common stock issued for share-based compensation	588	1	3,425	—	—	3,426
Tax withholding related to vesting of restricted stock	(171)	—	(11,175)	—	—	(11,175)
Share-based compensation expense	—	—	33,854	—	—	33,854
Balance at December 31, 2018	104,885	105	2,825,211	2,441,553	(54,466)	5,212,403
Net loss	—	—	—	(114,933)	—	(114,933)
Other comprehensive loss	—	—	—	—	(24,868)	(24,868)
Common stock issued for share-based compensation	869	1	3,433	—	—	3,434
Tax withholding related to vesting of restricted stock	(305)	(1)	(16,089)	—	—	(16,090)
Share-based compensation expense	—	—	36,821	—	—	36,821
Balance at December 31, 2019	105,449	$ 105	$ 2,849,376	$ 2,326,620	$ (79,334)	$ 5,096,767

See accompanying notes to these consolidated financial statements.

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

	Years Ended December 31,		
	2019	**2018**	**2017**
Cash flows from operating activities:			
Net (loss) income	$ (114,933)	$ 144,326	$ (165,615)
Adjustments to reconcile net (loss) income to cash provided by (used in) operating activities:			
Depreciation, amortization and accretion	205,475	130,736	115,313
Impairments and net losses on disposal of long-lived assets	7,577	8,065	35,364
Share-based compensation	37,429	34,154	35,121
Equity in earnings, net of tax	284	(34,620)	(4,266)
Distributions received from equity method investments	—	12,394	23,042
Remeasurement of monetary assets and liabilities	919	8,740	(15,823)
Deferred income taxes	(59,917)	(10,112)	173,368
Gains on sales of marketable securities and restricted investments	(40,621)	(55,405)	(49)
Liabilities assumed by customers for the sale of systems	(88,050)	(240,865)	(24,203)
Other, net	759	2,121	2,339
Changes in operating assets and liabilities:			
Accounts receivable, trade, unbilled and retainage	(73,594)	(202,298)	85,760
Prepaid expenses and other current assets	(34,528)	(53,488)	26,680
Inventories and balance of systems parts	(83,528)	(257,229)	212,758
Project assets and PV solar power systems	(20,773)	49,939	981,273
Other assets	28,728	(11,920)	(1,269)
Income tax receivable and payable	8,035	(49,169)	169,079
Accounts payable	(336)	96,443	(47,191)
Accrued expenses and other liabilities	397,527	132,382	(258,028)
Accrued solar module collection and recycling liability	3,748	(31,003)	(2,976)
Net cash provided by (used in) operating activities	174,201	(326,809)	1,340,677
Cash flows from investing activities:			
Purchases of property, plant and equipment	(668,717)	(739,838)	(514,357)
Purchases of marketable securities and restricted investments	(1,177,336)	(1,369,036)	(580,971)
Proceeds from sales and maturities of marketable securities and restricted investments	1,486,631	1,135,984	466,309
Proceeds from sales of equity method investments	—	247,595	—
Payments received on notes receivable, affiliates	—	48,729	1,740
Other investing activities	(2,876)	(6,148)	477
Net cash used in investing activities	(362,298)	(682,714)	(626,802)
Cash flows from financing activities:			
Repayment of long-term debt	(30,099)	(18,937)	(24,078)
Proceeds from borrowings under long-term debt, net of discounts and issuance costs	120,132	290,925	215,415
Payments of tax withholdings for restricted shares	(16,089)	(11,175)	(5,137)
Proceeds from commercial letters of credit	—	—	43,025
Contingent consideration payments and other financing activities	999	(5,585)	(37,180)
Net cash provided by financing activities	74,943	255,228	192,045
Effect of exchange rate changes on cash, cash equivalents and restricted cash	(2,959)	(13,558)	8,866
Net (decrease) increase in cash, cash equivalents and restricted cash	(116,113)	(767,853)	914,786
Cash, cash equivalents and restricted cash, beginning of the period	1,562,623	2,330,476	1,415,690
Cash, cash equivalents and restricted cash, end of the period	$ 1,446,510	$ 1,562,623	$ 2,330,476
Supplemental disclosure of noncash investing and financing activities:			
Property, plant and equipment acquisitions funded by liabilities	$ 76,148	$ 138,270	$ 164,946
Sale of system previously accounted for as sale-leaseback financing	$ —	$ 31,992	$ —
Accrued interest capitalized to long-term debt	$ —	$ 3,512	$ 18,401

See accompanying notes to these consolidated financial statements.

FIRST SOLAR, INC. AND SUBSIDIARIES

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. First Solar and Its Business

We are a leading global provider of comprehensive PV solar energy solutions. We design, manufacture, and sell PV solar modules with an advanced thin film semiconductor technology and also develop and sell PV solar power systems that primarily use the modules we manufacture. Additionally, we provide O&M services to system owners. We have substantial, ongoing R&D efforts focused on various technology innovations. We are the world's largest thin film PV solar module manufacturer and one of the world's largest PV solar module manufacturers.

2. Summary of Significant Accounting Policies

Basis of Presentation. These consolidated financial statements include the accounts of First Solar, Inc. and its subsidiaries and are prepared in accordance with U.S. GAAP. We eliminated all intercompany transactions and balances during consolidation. Certain prior year balances were reclassified to conform to the current year presentation.

Use of Estimates. The preparation of consolidated financial statements in conformity with U.S. GAAP requires us to make estimates and assumptions that affect the amounts reported in our consolidated financial statements and the accompanying notes. On an ongoing basis, we evaluate our estimates, including those related to inputs used to recognize revenue over time, accrued solar module collection and recycling liabilities, product warranties, accounting for income taxes, and long-lived asset impairments. Despite our intention to establish accurate estimates and reasonable assumptions, actual results could differ materially from such estimates and assumptions.

Fair Value Measurements. We measure certain assets and liabilities at fair value, which is defined as the price that would be received from the sale of an asset or paid to transfer a liability (i.e., an exit price) on the measurement date in an orderly transaction between market participants in the principal or most advantageous market for the asset or liability. Our fair value measurements use the following hierarchy, which prioritizes valuation inputs based on the extent to which the inputs are observable in the market.

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

Cash and Cash Equivalents. We consider highly liquid investments with original maturities of three months or less at the time of purchase to be cash equivalents with the exception of time deposits, which are presented as marketable securities.

Restricted Cash. Restricted cash consists of cash and cash equivalents held by various banks to secure certain of our letters of credit and other such deposits designated for the construction or operation of systems projects as well as the payment of amounts related to project specific debt financings. Restricted cash also includes cash and cash equivalents held in custodial accounts to fund the estimated future costs of our solar module collection and recycling obligations.

Restricted cash for our letters of credit is classified as current or noncurrent based on the maturity date of the corresponding letter of credit. Restricted cash for project construction, operation, and financing is classified as current or noncurrent based on the intended use of the restricted funds. Restricted cash held in custodial accounts is classified as noncurrent to align with the nature of the corresponding collection and recycling liabilities.

Marketable Securities and Restricted Investments. We determine the classification of our marketable securities and restricted investments at the time of purchase and reevaluate such designation at each balance sheet date. As of December 31, 2019 and 2018, all of our marketable securities and restricted investments were classified as available-for-sale debt securities. Accordingly, we record them at fair value and account for the net unrealized gains and losses as part of "Accumulated other comprehensive loss" until realized. We record realized gains and losses on the sale of our marketable securities and restricted investments in "Other income, net" computed using the specific identification method.

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

All of our available-for-sale marketable securities and restricted investments are subject to a periodic impairment review. We consider a marketable security or restricted investment to be impaired when its fair value is less than its cost basis, in which case we would further review the security or investment to determine if it is other-than-temporarily impaired. In performing such an evaluation, we review factors such as the length of time and the extent to which its fair value has been below its cost basis, the financial condition of the issuer and any changes thereto, our intent to sell, and whether it is more likely than not that we will be required to sell the marketable security or restricted investment before we have recovered its cost basis. If a marketable security or restricted investment were other-than-temporarily impaired, we write it down through "Other income, net" to its impaired value and establish that value as its new cost basis.

Accounts Receivable Trade and Allowance for Doubtful Accounts. We record trade accounts receivable for our unconditional rights to consideration arising from our performance under contracts with customers. The carrying value of such receivables, net of the allowance for doubtful accounts, represents their estimated net realizable value. We estimate our allowance for doubtful accounts for specific trade receivable balances based on historical collection trends, the age of outstanding trade receivables, existing economic conditions, and the financial security, if any, associated with the receivables. Past-due trade receivable balances are written off when our internal collection efforts have been unsuccessful.

Our module and other equipment sales generally include up to 45-day payment terms following the transfer of control of the products to the customer. In addition, certain module and equipment sale agreements may require a down payment for a portion of the transaction price upon or shortly after entering into the agreement or related purchase order. Payment terms for sales of our solar power systems, EPC services, and operations and maintenance services vary by contract but are generally due upon demand or within several months of satisfying the associated performance obligations. As a practical expedient, we do not adjust the promised amount of consideration for the effects of a significant financing component when we expect, at contract inception, that the period between our transfer of a promised product or service to a customer and when the customer pays for that product or service will be one year or less. We typically do not include extended payment terms in our contracts with customers.

Accounts Receivable, Unbilled. Accounts receivable, unbilled represents a contract asset for revenue that has been recognized in advance of billing the customer, which is common for long-term construction contracts. For example, we typically recognize revenue from contracts for the construction and sale of PV solar power systems over time using cost based input methods, which recognize revenue and gross profit as work is performed based on the relationship between actual costs incurred compared to the total estimated costs of the contract. Accordingly, revenue could be

recognized in advance of billing the customer, resulting in an amount recorded to "Accounts receivable, unbilled and retainage." Once we have an unconditional right to consideration under a construction contract, we typically bill our customer and reclassify the "Accounts receivable, unbilled and retainage" to "Accounts receivable trade, net." Billing requirements vary by contract but are generally structured around the completion of certain construction milestones. We assess our unbilled accounts receivable for impairment in accordance with the allowance for doubtful accounts policy described above.

Retainage. Certain of our EPC contracts for PV solar power systems we build contain retainage provisions. Retainage represents a contract asset for the portion of the contract price earned by us for work performed, but held for payment by the customer as a form of security until we reach certain construction milestones. We consider whether collectibility of such retainage is reasonably assured in connection with our overall assessment of the collectibility of amounts due or that will become due under our EPC contracts. Retainage included within "Accounts receivable, unbilled and retainage" is expected to be billed and collected within the next 12 months. After we satisfy the EPC contract requirements and have an unconditional right to consideration, we typically bill our customer for retainage and reclassify such amount to "Accounts receivable trade, net."

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

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

We regularly review the cost of inventories, including noncurrent inventories, against their estimated net realizable value and record write-downs if any inventories have costs in excess of their net realizable values. We also regularly evaluate the quantities and values of our inventories, including noncurrent inventories, in light of current market conditions and trends, among other factors, and record write-downs for any quantities in excess of demand or for any obsolescence. This evaluation considers the use of modules in our systems business or product warranties, module selling prices, product obsolescence, strategic raw material requirements, and other factors.

Balance of Systems Parts. BoS parts represent mounting, electrical, and other parts purchased for the construction and maintenance of PV solar power systems. These parts, which are not yet installed in a system, may include posts, tilt brackets, tables, harnesses, combiner boxes, inverters, cables, tracker equipment, and other items that we may purchase or assemble for the systems we construct. We carry BoS parts at the lower of cost or net realizable value and determine their costs on a weighted-average basis. BoS parts do not include any solar modules that we manufacture.

Property, Plant and Equipment. We report our property, plant and equipment at cost, less accumulated depreciation. Cost includes the price paid to acquire or construct the assets, required installation costs, interest capitalized during the construction period, and any expenditures that substantially add to the value of or substantially extend the useful life of the assets. We capitalize costs related to computer software obtained or developed for internal use, which generally includes enterprise-level business and finance software that we customize to meet our specific operational requirements. We expense repair and maintenance costs at the time we incur them.

We begin depreciation for our property, plant and equipment when the assets are placed in service. We consider such assets to be placed in service when they are both in the location and condition for their intended use. We compute depreciation expense using the straight-line method over the estimated useful lives of assets, as presented in the table

below. We depreciate leasehold improvements over the shorter of their estimated useful lives or the remaining term of the lease. The estimated useful life of an asset is reassessed whenever applicable facts and circumstances indicate a change in the estimated useful life of such asset has occurred.

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

PV Solar Power Systems. PV solar power systems represent project assets that we may temporarily own and operate after being placed in service. We report our PV solar power systems at cost, less accumulated depreciation. When we are entitled to incentive tax credits for our systems, we reduce the related carrying value of the assets by the amount of the tax credits, which reduces future depreciation. We begin depreciation for PV solar power systems when they are placed in service. We compute depreciation expense for the systems using the straight-line method over the shorter of the term of the related PPA or 25 years. Accordingly, our current PV solar power systems have estimated useful lives ranging from 19 to 25 years.

Project Assets. Project assets primarily consist of costs related to solar power projects in various stages of development that are capitalized prior to the completion of the sale of the project, including projects that may have begun commercial operation under PPAs and are actively marketed and intended to be sold. These project related costs include costs for land, development, and construction of a PV solar power system. Development costs may include legal, consulting, permitting, transmission upgrade, interconnection, and other similar costs. We typically classify project assets as noncurrent due to the nature of solar power projects (as long-lived assets) and the time required to complete all activities to develop, construct, and sell projects, which is typically longer than 12 months. Once we enter into a definitive sales agreement, we classify project assets as current until the sale is completed and we have recognized the sale as revenue. Any income generated by a project while it remains within project assets is accounted for as a reduction to our basis in the project. If a project is completed and begins commercial operation prior to the closing of a sales arrangement, the completed project will remain in project assets until placed in service. We present all expenditures related to the development and construction of project assets, whether fully or partially owned, as a component of cash flows from operating activities.

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

Interest Capitalization. We capitalize interest as part of the historical cost of acquiring, developing, or constructing certain assets, including property, plant and equipment; project assets; and PV solar power systems. Interest capitalized for property, plant and equipment or PV solar power systems is depreciated over the estimated useful life of the related assets when they are placed in service. We charge interest capitalized for project assets to cost of sales when such assets are sold. We capitalize interest to the extent that interest has been incurred and payments have been made to acquire, construct, or develop an asset. We cease capitalization of interest for assets in development or under construction if the assets are substantially complete or if we have sold such assets.

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

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

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

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

Ventures and Variable Interest Entities. In the normal course of business, we establish wholly owned project companies which may be considered variable interest entities ("VIEs"). We consolidate wholly owned VIEs when we are considered the primary beneficiary of such entities. Additionally, we have, and may in the future form, joint venture type arrangements, including partnerships and partially owned limited liability companies or similar legal structures, with one or more third parties primarily to develop, construct, own, and/or sell solar power projects. We analyze all of our ventures and classify them into two groups: (i) ventures that must be consolidated because they are either not VIEs and we hold a majority voting interest, or because they are VIEs and we are the primary beneficiary and (ii) ventures that do not need to be consolidated because they are either not VIEs and we hold a minority voting interest, or because they are VIEs and we are not the primary beneficiary.

Ventures are considered VIEs if (i) the total equity investment at risk is not sufficient to permit the entity to finance its activities without additional subordinated financial support; (ii) as a group, the holders of the equity investment at risk lack the ability to make certain decisions, the obligation to absorb expected losses, or the right to receive expected residual returns; or (iii) an equity investor has voting rights that are disproportionate to its economic interest and substantially all of the entity's activities are conducted on behalf of that investor. Our venture agreements typically

require us to fund some form of capital for the development and construction of a project, depending upon the opportunity and the market in which our ventures are located.

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

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

We monitor equity method investments for impairment and record reductions in their carrying values if the carrying amount of an investment exceeds its fair value. An impairment charge is recorded when such impairment is deemed to be other-than-temporary. To determine whether an impairment is other-than-temporary, we consider our ability and intent to hold the investment until the carrying amount is fully recovered. Circumstances that indicate an other-than-temporary impairment may have occurred include factors such as decreases in quoted market prices or declines in the operations of the investee. The evaluation of an investment for potential impairment requires us to exercise significant judgment and to make certain assumptions. The use of different judgments and assumptions could result in different conclusions. We recorded impairment losses related to our equity method investments of $3.5 million and $2.0 million, net of tax, during the years ended December 31, 2018 and 2017, respectively.

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

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

The quantitative impairment test is the comparison of the fair value of a reporting unit with its carrying amount, including goodwill. Our reporting units consist of our modules and systems businesses. We define the fair value of a reporting unit as the price that would be received to sell the unit as a whole in an orderly transaction between market participants at the measurement date. We primarily use an income approach to estimate the fair value of our reporting units. Significant

judgment is required when estimating the fair value of a reporting unit, including the forecasting of future operating results and the selection of discount and expected future growth rates used to determine projected cash flows. If the estimated fair value of a reporting unit exceeds its carrying value, goodwill is not impaired, and no further analysis is required. Conversely, if the carrying value of a reporting unit exceeds its estimated fair value, we record an impairment loss equal to the excess, not to exceed the total amount of goodwill allocated to the reporting unit.

Intangible Assets. Intangible assets primarily include developed technologies, certain PPAs acquired after the associated PV solar power systems were placed in service, and our internally-generated intangible assets, substantially all of which were patents on technologies related to our products and production processes. We record an asset for patents after the patent has been issued based on the legal, filing, and other costs incurred to secure it. We amortize intangible assets on a straight-line basis over their estimated useful lives, which generally range from 10 to 20 years.

Leases. Upon commencement of a lease, we recognize a lease liability for the present value of the lease payments not yet paid, discounted using an interest rate that represents our ability to borrow on a collateralized basis over a period that approximates the lease term. We also recognize a lease asset, which represents our right to control the use of the underlying property, plant or equipment, at an amount equal to the lease liability, adjusted for prepayments and initial direct costs.

We subsequently recognize the cost of operating leases on a straight-line basis over the lease term, and any variable lease costs, which represent amounts owed to the lessor that are not fixed per the terms of the contract, are recognized in the period in which they are incurred. Any costs included in our lease arrangements that are not directly related to the leased assets, such as maintenance charges, are included as part of the lease costs. Leases with an initial term of one year or less are considered short-term leases and are not recognized as lease assets and liabilities. We also recognize the cost of such short-term leases on a straight-line basis over the term of the underlying agreement.

Many of our leases, in particular those related to systems project land, contain renewal or termination options that are exercisable at our discretion. At the commencement date of a lease, we include in the lease term any periods covered by a renewal option, and exclude from the lease term any periods covered by a termination option, to the extent we are reasonably certain to exercise such options. In making this determination, we seek to align the lease term with the expected economic life of the underlying asset.

Deferred Revenue. When we receive consideration, or such consideration is unconditionally due, from a customer prior to transferring goods or services to the customer under the terms of a sales contract, we record deferred revenue, which represents a contract liability. Such deferred revenue typically results from billings in excess of costs incurred on long-term construction contracts and advance payments received on sales of solar modules. As a practical expedient, we do not adjust the consideration in a contract for the effects of a significant financing component when we expect, at contract inception, that the period between a customer's advance payment and our transfer of a promised product or service to the customer will be one year or less. Additionally, we do not adjust the consideration in a contract for the effects of a significant financing component when the consideration is received as a form of performance security.

Product Warranties. We provide a limited PV solar module warranty covering defects in materials and workmanship under normal use and service conditions for approximately 10 years. We also typically warrant that modules installed in accordance with agreed-upon specifications will produce at least 98% of their labeled power output rating during the first year, with the warranty coverage reducing by 0.5% every year thereafter throughout the approximate 25-year limited power output warranty period. In resolving claims under both the limited defect and power output warranties, we typically have the option of either repairing or replacing the covered modules or, under the limited power output warranty, providing additional modules to remedy the power shortfall. Our limited module warranties also include an option for us to remedy claims under such warranties, generally exercisable only after the second year of the warranty period, by making certain cash payments. Under the limited workmanship warranty, the optional cash payment will be equal to the original purchase price of the module, reduced by a degradation factor, and under the limited power output warranty, the cash payment will be equal to the shortfall in power output. Such limited module warranties are standard

for module sales and may be transferred from the original purchasers of the solar modules to subsequent purchasers upon resale.

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

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

When we recognize revenue for module or system sales, we accrue liabilities for the estimated future costs of meeting our limited warranty obligations. We make and revise these estimates based primarily on the number of solar modules under warranty installed at customer locations, our historical experience with and projections of warranty claims, and our estimated per-module replacement costs. We also monitor our expected future module performance through certain quality and reliability testing and actual performance in certain field installation sites.

Accrued Solar Module Collection and Recycling Liability. Historically, we recognized expense at the time of sale for the estimated cost of our future obligations for collecting and recycling solar modules covered by our solar module collection and recycling program. See Note 12. "Solar Module Collection and Recycling Liability" for further information.

Derivative Instruments. We recognize derivative instruments on our consolidated balance sheets at their fair value. On the date that we enter into a derivative contract, we designate the derivative instrument as a fair value hedge, a cash flow hedge, a hedge of a net investment in a foreign operation, or a derivative instrument that will not be accounted for using hedge accounting methods. As of December 31, 2019 and 2018, all of our derivative instruments were designated either as cash flow hedges or as derivative instruments not accounted for using hedge accounting methods.

We record changes in the fair value of a derivative instrument that is highly effective and that is designated and qualifies as a cash flow hedge in "Accumulated other comprehensive loss" until our earnings are affected by the variability of the cash flows from the underlying hedged item. We record any amounts excluded from effectiveness testing in current period earnings in the same income statement line item in which the earnings effect of the hedged item is reported. We report changes in the fair value of derivative instruments that are not designated or do not qualify for hedge accounting in current period earnings. We classify cash flows from derivative instruments on the consolidated statements of cash flows in the same category as the item being hedged or on a basis consistent with the nature of the instrument.

At the inception of a hedge, we formally document all relationships between hedging instruments and the underlying hedged items as well as our risk-management objective and strategy for undertaking the hedge transaction. We also formally assess (both at inception and on an ongoing basis) whether our derivative instruments are highly effective in offsetting changes in the fair value or cash flows of the underlying hedged items and whether those derivatives are

expected to remain highly effective in future periods. When we determine that a derivative instrument is not highly effective as a hedge, we discontinue hedge accounting prospectively. In all situations in which we discontinue hedge accounting and the derivative instrument remains outstanding, we carry the derivative instrument at its fair value on our consolidated balance sheets and recognize subsequent changes in its fair value in current period earnings.

Revenue Recognition – Module and Other Equipment Sales. We recognize revenue for module and other equipment sales (e.g., module plus arrangements) at a point in time following the transfer of control of such products to the customer, which typically occurs upon shipment or delivery depending on the terms of the underlying contracts. For module and other equipment sales contracts that contain multiple performance obligations, such as the shipment or delivery of solar modules and other BoS parts, we allocate the transaction price to each performance obligation identified in the contract based on relative standalone selling prices, or estimates of such prices, and recognize the related revenue as control of each individual product is transferred to the customer, in satisfaction of the corresponding performance obligations.

Revenue Recognition – Solar Power System Sales and/or EPC Services. We recognize revenue for the sale of a development project, which excludes EPC services, or for the sale of a completed system when we enter into the associated sales contract with the customer. For other sales of solar power systems and/or EPC services, we generally recognize revenue over time as our performance creates or enhances an energy generation asset controlled by the customer. Furthermore, the sale of a solar power system combined with EPC services represents a single performance obligation for the development and construction of a single generation asset. For such arrangements, we recognize revenue and gross profit as work is performed using cost based input methods, for which we determine our progress toward contract completion based on the relationship between the actual costs incurred and the total estimated costs (including solar module costs) of the contract.

Such revenue recognition is dependent, in part, on our customers' commitment to perform their obligations under the contract, which is typically measured through the receipt of cash deposits or other forms of financial security issued by creditworthy financial institutions or parent entities. For sales of solar power systems 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 noncontrolling interest we obtained, and defer any profit associated with the interest obtained through "Equity in earnings, net of tax."

Cost based input methods of revenue recognition are considered a faithful depiction of our efforts to satisfy long-term construction contracts and therefore reflect the transfer of goods to a customer under such contracts. Costs incurred that do not contribute to satisfying our performance obligations (i.e., "inefficient costs") are excluded from our input methods of revenue recognition as the amounts are not reflective of our transferring control of the system to the customer. Costs incurred toward contract completion may include costs associated with solar modules, direct materials, labor, subcontractors, and other indirect costs related to contract performance. We recognize solar module and direct material costs as incurred when such items are installed in a system.

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 the estimated total costs on any contract, including any inefficient costs, are greater than the net contract revenues, 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 or costs to complete contracts are recorded in the period in which the revisions to estimates are identified and the amounts can be reasonably estimated. The effect of the changes on future periods are recognized as if the revised estimates had been used since revenue was initially recognized under the contract. Such revisions could occur in any reporting period, and the effects may be material depending on the size of the contracts or the changes in estimates.

As part of our solar power system sales, we conduct performance testing of a system prior to substantial completion to confirm the system meets its operational and capacity expectations noted in the EPC agreement. In addition, we may provide an energy performance test during the first or second year of a system's operation to demonstrate that the actual energy generation for the applicable period meets or exceeds the modeled energy expectation, after certain adjustments. In certain instances, a bonus payment may be received at the end of the applicable test period if the system performs above a specified level. Conversely, if there is an underperformance event with regards to these tests, we may incur liquidated damages as a percentage of the EPC contract price. Such performance guarantees represent a form of variable consideration and are estimated at contract inception at their most likely amount and updated at the end of each reporting period as additional performance data becomes available and only to the extent that it is probable that a significant reversal of any incremental revenue will not occur.

Revenue Recognition – Operations and Maintenance. We recognize revenue for standard, recurring O&M services over time as customers receive and consume the benefits of such services, which typically include 24/7 system monitoring, certain PPA and other agreement compliance, NERC compliance, large generator interconnection agreement compliance, energy forecasting, performance engineering analysis, regular performance reporting, turn-key maintenance services including spare parts and corrective maintenance repair, warranty management, and environmental services. Other ancillary O&M services, such as equipment replacement, weed abatement, landscaping, or solar module cleaning, are recognized as revenue as the services are provided to the customer. Costs of O&M services are expensed in the period in which they are incurred.

As part of our O&M service offerings, we typically offer an effective availability guarantee, which stipulates that a system will be available to generate a certain percentage of total possible energy during a specific period after adjusting for factors outside our control as the service provider. If system availability exceeds a contractual threshold, we may receive a bonus payment, or if system availability falls below a separate threshold, we may incur liquidated damages for certain lost energy under the PPA. Such bonuses or liquidated damages represent a form of variable consideration and are estimated and recognized over time as customers receive and consume the benefits of the O&M services.

Revenue Recognition – Energy Generation. We sell energy generated by PV solar power systems under PPAs or on an open contract basis. For energy sold under PPAs, we recognize revenue each period based on the volume of energy delivered to the customer (i.e., the PPA off-taker) and the price stated in the PPA. For energy sold on an open contract basis, we recognize revenue at the point in time the energy is delivered to the grid based on the prevailing spot market prices.

Shipping and Handling Costs. We account for shipping and handling activities related to contracts with customers as costs to fulfill our promise to transfer the associated products. Accordingly, we record amounts billed for shipping and handling costs as a component of net sales, and classify such costs as a component of cost of sales.

Taxes Collected from Customers and Remitted to Governmental Authorities. We exclude from our measurement of transaction prices all taxes assessed by governmental authorities that are both (i) imposed on and concurrent with a specific revenue-producing transaction and (ii) collected from customers. Accordingly, such tax amounts are not included as a component of net sales or cost of sales.

Research and Development Expense. We incur research and development costs during the process of researching and developing new products and enhancing our existing products, technologies, and manufacturing processes. Our research and development costs consist primarily of employee compensation, materials, outside services, and depreciation. We expense these costs as incurred until the resulting product has been completed, tested, and made ready for commercial manufacturing.

Production Start-Up. Production start-up expense consists primarily of employee compensation and other costs associated with operating a production line before it is qualified for full production, including the cost of raw materials for solar modules run through the production line during the qualification phase and applicable facility related costs. Costs related to equipment upgrades and implementation of manufacturing process improvements are also included in

production start-up expense as well as costs related to the selection of a new site, related legal and regulatory costs, and costs to maintain our plant replication program to the extent we cannot capitalize these expenditures.

Restructuring and Exit Activities. We record costs associated with significant exit activities when management approves and commits to a plan of termination or over the future service period for certain employee termination benefits. Such exit activities represent programs that materially change our scope of business or the manner in which we conduct our business. Costs associated with these programs may include one-time employee termination benefits, contract termination costs, including costs related to leased facilities to be abandoned or subleased, and asset impairment charges.

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

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

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

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

Per Share Data. Basic net income or loss per share is computed by dividing net income or loss by the weighted-average number of common shares outstanding for the period. Diluted net income per share is computed giving effect to all potentially dilutive common shares, including restricted and performance stock units and stock purchase plan shares, unless there is a net loss for the period. In computing diluted net income per share, we utilize the treasury stock method.

Accumulated Other Comprehensive Income or Loss. Our accumulated other comprehensive income or loss includes foreign currency translation adjustments, unrealized gains and losses on available-for-sale debt securities, and unrealized gains and losses on derivative instruments designated and qualifying as cash flow hedges. We record these components of accumulated other comprehensive income or loss net of tax and release such tax effects when the underlying components affect earnings.

3. Recent Accounting Pronouncements

In August 2017, the Financial Accounting Standards Board ("FASB") issued ASU 2017-12, *Derivatives and Hedging (Topic 815) – Targeted Improvements to Accounting for Hedging Activities*, to simplify certain aspects of hedge accounting for both non-financial and financial risks and better align the recognition and measurement of hedge results with an entity's risk management activities. ASU 2017-12 also amends certain presentation and disclosure requirements for hedging activities and changes how an entity assesses hedge effectiveness. The adoption of ASU 2017-12 in the first quarter of 2019 did not have a significant impact on our consolidated financial statements and associated disclosures.

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments – Credit Losses (Topic 326)*, to provide financial statement users with more useful information about expected credit losses. ASU 2016-13 also changes how entities measure credit losses on financial instruments and the timing of when such losses are recorded. ASU 2016-13 is effective for fiscal years and interim periods within those years beginning after December 15, 2019, and early adoption is permitted for periods beginning after December 15, 2018. We expect to adopt ASU 2016-13 in the first quarter of 2020 and are currently evaluating its impact on our consolidated financial statements and associated disclosures.

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)*, to increase transparency and comparability among organizations by recognizing a right-of-use asset and a lease liability on the balance sheet for all leases with terms longer than 12 months and disclosing key information about leasing transactions. Leases are classified as either operating or financing, with such classification affecting the pattern of expense recognition in the income statement. 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.

We adopted ASU 2016-02 in the first quarter of 2019 using the optional transition method and elected certain practical expedients permitted under the transition guidance, which, among other things, allowed us to not reassess prior conclusions related to contracts containing leases or lease classification. The adoption primarily affected our condensed consolidated balance sheet through the recognition of $140.7 million of right-of-use assets and $119.9 million of lease liabilities as of January 1, 2019 and the derecognition of historical prepaid and deferred rent balances. The adoption did not have a significant impact on our results of operations or cash flows. See Note 10. "Leases" to our consolidated financial statements for further discussion of the effects of the adoption of ASU 2016-02 and the associated disclosures.

4. Restructuring and Asset Impairments

Cadmium Telluride Module Manufacturing and Corporate Restructuring

In November 2016, our board of directors approved a set of initiatives intended to accelerate our transition to Series 6 module manufacturing and restructure our operations to reduce costs and better align the organization with our long-term strategic plans. As a result of these initiatives, we incurred net charges of $41.8 million during the year ended December 31, 2017, which included (i) $27.6 million of charges, primarily related to net losses on the disposition of previously impaired Series 4 and Series 5 manufacturing equipment, (ii) $7.6 million of severance benefits to terminated employees, and (iii) $6.7 million of net miscellaneous charges, primarily related to contract terminations, the write-off of operating supplies, and other Series 4 manufacturing exit costs.

Substantially all amounts associated with these restructuring and asset impairment charges related to our modules segment and were classified as "Restructuring and asset impairments" on the consolidated statements of operations, and substantially all of the associated liabilities were paid or settled as of December 31, 2017.

Other Restructuring

During the year ended December 31, 2012, we recognized a liability for the expected repayment of certain customs tax benefits as part of a prior restructuring activity. In December 2017, we reversed this liability as a result of meeting certain investment certificate criteria associated with the commencement of operations at our previously announced manufacturing plant in Vietnam and recorded a $4.7 million benefit to "Restructuring and asset impairments."

5. Goodwill and Intangible Assets

Goodwill

The changes in the carrying amount of goodwill, by reporting unit, for the years ended December 31, 2019 and 2018 were as follows (in thousands):

	Balance at December 31, 2018	Acquisitions (Impairments)	Balance at December 31, 2019
Modules	$ 407,827	$ —	$ 407,827
Accumulated impairment losses	(393,365)	—	(393,365)
Total	$ 14,462	$ —	$ 14,462

	Balance at December 31, 2017	Acquisitions (Impairments)	Balance at December 31, 2018
Modules	$ 407,827	$ —	$ 407,827
Accumulated impairment losses	(393,365)	—	(393,365)
Total	$ 14,462	$ —	$ 14,462

We performed our annual impairment analysis in the fourth quarter of 2019, 2018, and 2017. ASC 350-20 allows companies to perform a qualitative assessment of whether it is more likely than not that a reporting unit's fair value is less than its carrying value to determine whether it is necessary to perform a quantitative goodwill impairment test. Such qualitative assessment considers various factors, including macroeconomic conditions, industry and market considerations, cost factors, the overall financial performance of a reporting unit, and any other relevant events affecting our company or a reporting unit.

We performed a qualitative assessment for our modules reporting unit in each respective period and concluded that it was not more likely than not that the fair value of the reporting unit was less than its carrying amount. Accordingly, a quantitative goodwill impairment test for this reporting unit was not required in either period.

Intangible Assets, Net

The following tables summarize our intangible assets at December 31, 2019 and 2018 (in thousands):

	December 31, 2019		
	Gross Amount	Accumulated Amortization	Net Amount
Developed technology	$ 97,964	$ (42,344)	$ 55,620
Power purchase agreements	6,486	(972)	5,514
Patents	7,780	(4,371)	3,409
Total	$ 112,230	$ (47,687)	$ 64,543

	December 31, 2018		
	Gross Amount	Accumulated Amortization	Net Amount
Developed technology	$ 97,714	$ (33,093)	$ 64,621
Power purchase agreements	6,486	(648)	5,838
Patents	7,408	(3,705)	3,703
Total	$ 111,608	$ (37,446)	$ 74,162

Amortization expense for our intangible assets was $10.2 million, $9.9 million, and $8.3 million for the years ended December 31, 2019, 2018, and 2017, respectively.

Estimated future amortization expense for our definite-lived intangible assets was as follows at December 31, 2019 (in thousands):

	Amortization Expense
2020	$ 10,498
2021	10,496
2022	10,471
2023	10,187
2024	10,057
Thereafter	12,834
Total amortization expense	$ 64,543

6. Cash, Cash Equivalents, and Marketable Securities

Cash, cash equivalents, and marketable securities consisted of the following at December 31, 2019 and 2018 (in thousands):

	2019	2018
Cash and cash equivalents:		
Cash	$ 1,345,419	$ 1,202,774
Money market funds	7,322	200,788
Total cash and cash equivalents	1,352,741	1,403,562
Marketable securities:		
Foreign debt	387,820	318,646
Foreign government obligations	22,011	98,621
U.S. debt	66,134	44,468
Time deposits	335,541	681,969
Total marketable securities	811,506	1,143,704
Total cash, cash equivalents, and marketable securities	$ 2,164,247	$ 2,547,266

The following table provides a reconciliation of cash, cash equivalents, and restricted cash reported within our consolidated balance sheets as of December 31, 2019 and 2018 to the total of such amounts as presented in the consolidated statements of cash flows (in thousands):

	Balance Sheet Line Item	2019	2018
Cash and cash equivalents	Cash and cash equivalents	$ 1,352,741	$ 1,403,562
Restricted cash – current (1)	Prepaid expenses and other current assets	13,697	19,671
Restricted cash – noncurrent (1)	Restricted cash and investments	80,072	139,390
Total cash, cash equivalents, and restricted cash		$ 1,446,510	$ 1,562,623

(1) See Note 7. “Restricted Cash and Investments” to our consolidated financial statements for discussion of our “Restricted cash” arrangements.

During the year ended December 31, 2019, we sold marketable securities for proceeds of $52.0 million and realized no gain or loss on such sales. During the years ended December 31, 2018 and 2017, we sold marketable securities for proceeds of $10.8 million and $118.3 million, respectively, and realized gains of less than $0.1 million on such sales in each respective period. See Note 11. “Fair Value Measurements” to our consolidated financial statements for information about the fair value of our marketable securities.

The following tables summarize the unrealized gains and losses related to our available-for-sale marketable securities, by major security type, as of December 31, 2019 and 2018 (in thousands):

	As of December 31, 2019			
	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
Foreign debt	$ 387,775	$ 551	$ 506	$ 387,820
Foreign government obligations	21,991	20	—	22,011
U.S. debt	65,970	176	12	66,134
Time deposits	335,541	—	—	335,541
Total	$ 811,277	$ 747	$ 518	$ 811,506

	As of December 31, 2018			
	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
Foreign debt	$ 320,056	$ 468	$ 1,878	$ 318,646
Foreign government obligations	99,189	—	568	98,621
U.S. debt	44,625	53	210	44,468
Time deposits	681,969	—	—	681,969
Total	$ 1,145,839	$ 521	$ 2,656	$ 1,143,704

As of December 31, 2019, we had no investments in a loss position for a period of time greater than 12 months. As of December 31, 2018, we identified 15 investments totaling $207.2 million that had been in a loss position for a period of time greater than 12 months with unrealized losses of $1.8 million. The unrealized losses were primarily due to increases in interest rates relative to rates at the time of purchase. Based on the underlying credit quality of the investments, we generally hold such securities until we recover our cost basis. Therefore, we did not consider these securities to be other-than-temporarily impaired.

The following tables show unrealized losses and fair values for those marketable securities that were in an unrealized loss position as of December 31, 2019 and 2018, aggregated by major security type and the length of time the marketable securities have been in a continuous loss position (in thousands):

	As of December 31, 2019					
	In Loss Position for Less Than 12 Months		In Loss Position for 12 Months or Greater		Total	
	Fair Value	Unrealized Losses	Fair Value	Unrealized Losses	Fair Value	Unrealized Losses
Foreign debt	$ 178,174	$ 506	$ —	$ —	$ 178,174	$ 506
U.S. debt	30,566	12	—	—	30,566	12
Total	$ 208,740	$ 518	$ —	$ —	$ 208,740	$ 518

	As of December 31, 2018					
	In Loss Position for Less Than 12 Months		In Loss Position for 12 Months or Greater		Total	
	Fair Value	Unrealized Losses	Fair Value	Unrealized Losses	Fair Value	Unrealized Losses
Foreign debt	$ 150,842	$ 802	$ 94,446	$ 1,076	$ 245,288	$ 1,878
Foreign government obligations	—	—	98,621	568	98,621	568
U.S. debt	$ 15,356	$ 32	$ 14,085	$ 178	$ 29,441	$ 210
Total	$ 166,198	$ 834	$ 207,152	$ 1,822	$ 373,350	$ 2,656

The contractual maturities of our marketable securities as of December 31, 2019 were as follows (in thousands):

	Fair Value
One year or less	$ 488,118
One year to two years	164,410
Two years to three years	158,978
Total	$ 811,506

7. Restricted Cash and Investments

Restricted cash and investments consisted of the following at December 31, 2019 and 2018 (in thousands):

	2019	2018
Restricted cash	$ 80,072	$ 139,390
Restricted investments	223,785	179,000
Total restricted cash and investments (1)	$ 303,857	$ 318,390

(1) There was an additional $13.7 million and $19.7 million of restricted cash included within "Prepaid expenses and other current assets" at December 31, 2019 and 2018, respectively.

At December 31, 2019 and 2018, our restricted cash consisted of deposits held by various banks to secure certain of our letters of credit and other deposits designated for the construction or operation of systems projects as well as the payment of amounts related to project specific debt financings. At December 31, 2018, our restricted cash also included certain deposits held in custodial accounts to fund the estimated future costs of our solar module collection and recycling obligations.

At December 31, 2019 and 2018, our restricted investments consisted of long-term marketable securities that were also held in custodial accounts to fund the estimated future costs of collecting and recycling modules covered under our solar module collection and recycling program. As necessary, we fund any incremental amounts for our estimated collection and recycling obligations on an annual basis based on the estimated costs of collecting and recycling covered modules, estimated rates of return on our restricted investments, and an estimated solar module life of 25 years less amounts already funded in prior years. To ensure that amounts previously funded will be available in the future regardless of potential adverse changes in our financial condition (even in the case of our own insolvency), we have established a trust under which estimated funds are put into custodial accounts with an established and reputable bank, for which First Solar, Inc.; First Solar Malaysia Sdn. Bhd.; and First Solar Manufacturing GmbH are grantors. Trust funds may be disbursed for qualified module collection and recycling costs (including capital and facility related recycling costs), payments to customers for assuming collection and recycling obligations, and reimbursements of any overfunded amounts. Investments in the trust must meet certain investment quality criteria comparable to highly rated government or agency bonds.

During the year ended December 31, 2019, we sold certain restricted investments for proceeds of $281.6 million and realized gains of $40.6 million on such sales as part of efforts to align the currencies of the investments with those of the corresponding collection and recycling liabilities and disburse $22.2 million of overfunded amounts. During the year ended December 31, 2018, we sold certain restricted investments for proceeds of $231.1 million and realized gains of $55.4 million on such sales as part of an effort to align the currencies of the investments with those corresponding collection and recycling liabilities and disburse $143.1 million of overfunded amounts. See Note 11. “Fair Value Measurements” to our consolidated financial statements for information about the fair value of our restricted investments.

The following tables summarize the unrealized gains and losses related to our restricted investments, by major security type, as of December 31, 2019 and 2018 (in thousands):

	As of December 31, 2019			
	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
Foreign government obligations	$ 129,499	$ —	$ 3,433	$ 126,066
U.S. government obligations	99,700	—	1,981	97,719
Total	$ 229,199	$ —	$ 5,414	$ 223,785

	As of December 31, 2018			
	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
Foreign government obligations	$ 73,798	$ 14,234	$ 235	$ 87,797
U.S. government obligations	97,223	416	6,436	91,203
Total	$ 171,021	$ 14,650	$ 6,671	$ 179,000

As of December 31, 2019, we had no restricted investments in a loss position for a period of time greater than 12 months. As of December 31, 2018, we identified six restricted investments totaling $87.4 million that had been in a loss position for a period of time greater than 12 months with unrealized losses of $6.4 million. The unrealized losses were primarily due to increases in interest rates relative to rates at the time of purchase. Based on the underlying credit quality of the investments, we generally hold such securities until we recover our cost basis. Therefore, we did not consider these securities to be other-than-temporarily impaired.

The following tables show unrealized losses and fair values for those restricted investments that were in an unrealized loss position as of December 31, 2019 and 2018, aggregated by major security type and the length of time the restricted investments have been in a continuous loss position (in thousands):

	As of December 31, 2019					
	In Loss Position for Less Than 12 Months		In Loss Position for 12 Months or Greater		Total	
	Fair Value	Unrealized Losses	Fair Value	Unrealized Losses	Fair Value	Unrealized Losses
Foreign government obligations	$ 126,066	$ 3,433	$ —	$ —	$ 126,066	$ 3,433
U.S. government obligations	97,719	1,981	—	—	97,719	1,981
Total	$ 223,785	$ 5,414	$ —	$ —	$ 223,785	$ 5,414

	As of December 31, 2018					
	In Loss Position for Less Than 12 Months		In Loss Position for 12 Months or Greater		Total	
	Fair Value	Unrealized Losses	Fair Value	Unrealized Losses	Fair Value	Unrealized Losses
Foreign government obligations	$ 41,335	$ 235	$ —	$ —	$ 41,335	$ 235
U.S. government obligations	—	—	87,401	6,436	87,401	6,436
Total	$ 41,335	$ 235	$ 87,401	$ 6,436	$ 128,736	$ 6,671

As of December 31, 2019, the contractual maturities of our restricted investments were between 10 years and 21 years.

8. Consolidated Balance Sheet Details

Accounts receivable trade, net

Accounts receivable trade, net consisted of the following at December 31, 2019 and 2018 (in thousands):

	2019	2018
Accounts receivable trade, gross	$ 476,425	$ 129,644
Allowance for doubtful accounts	(1,386)	(1,362)
Accounts receivable trade, net	$ 475,039	$ 128,282

At December 31, 2019 and 2018, $44.9 million and $8.5 million, respectively, of our accounts receivable trade, net were secured by letters of credit, bank guarantees, surety bonds, or other forms of financial security issued by creditworthy financial institutions.

Accounts receivable, unbilled and retainage

Accounts receivable, unbilled and retainage consisted of the following at December 31, 2019 and 2018 (in thousands):

	2019	2018
Accounts receivable, unbilled	$ 162,057	$ 441,666
Retainage	21,416	16,500
Accounts receivable, unbilled and retainage	$ 183,473	$ 458,166

Inventories

Inventories consisted of the following at December 31, 2019 and 2018 (in thousands):

	2019	2018
Raw materials	$ 248,756	$ 224,329
Work in process	59,924	41,294
Finished goods	295,479	252,372
Inventories	$ 604,159	$ 517,995
Inventories – current	$ 443,513	$ 387,912
Inventories – noncurrent	$ 160,646	$ 130,083

Prepaid expenses and other current assets

Prepaid expenses and other current assets consisted of the following at December 31, 2019 and 2018 (in thousands):

	2019	2018
Prepaid expenses	$ 137,927	$ 90,981
Prepaid income taxes	47,811	59,319
Indirect tax receivables	29,908	26,327
Restricted cash	13,697	19,671
Notes receivable (1)	23,873	5,196
Derivative instruments (2)	1,199	2,364
Other current assets	22,040	39,203
Prepaid expenses and other current assets	$ 276,455	$ 243,061

(1) In November 2014 and February 2016, we entered into a term loan agreement and a convertible loan agreement, respectively, with Clean Energy Collective, LLC ("CEC"). Our term loan bears interest at 16% per annum, and our convertible loan bears interest at 10% per annum. In November 2018, we amended the terms of the loan agreements to (i) extend their maturity to June 2020, (ii) waive the conversion features on our convertible loan, and (iii) increase the frequency of interest payments, subject to certain conditions. In January 2019, CEC finalized certain restructuring arrangements, which resulted in a dilution of our ownership interest in CEC and the loss of our representation on the company's board of managers. As a result of such restructuring, CEC no longer qualified to be accounted for under the equity method. As of December 31, 2019, the aggregate balance outstanding on the loans was $23.9 million and was presented within "Prepaid expenses and other current assets." As of December 31, 2018, the aggregate balance outstanding on the loans was $22.8 million and was presented within "Notes receivable, affiliate."

(2) See Note 9. "Derivative Financial Instruments" to our consolidated financial statements for discussion of our derivative instruments.

Property, plant and equipment, net

Property, plant and equipment, net consisted of the following at December 31, 2019 and 2018 (in thousands):

	2019	2018
Land	$ 14,241	$ 14,382
Buildings and improvements	664,266	567,605
Machinery and equipment	2,436,997	1,826,434
Office equipment and furniture	159,848	178,011
Leasehold improvements	48,772	49,055
Construction in progress	243,107	405,581
Property, plant and equipment, gross	3,567,231	3,041,068
Accumulated depreciation	(1,386,082)	(1,284,857)
Property, plant and equipment, net	$ 2,181,149	$ 1,756,211

We periodically assess the estimated useful lives of our property, plant and equipment whenever applicable facts and circumstances indicate a change in the estimated useful life of an asset may have occurred. During the year ended December 31, 2019, we revised the estimated useful lives of certain core Series 6 manufacturing equipment from 10 years to 15 years. Such revision was primarily due to the validation of certain aspects of our Series 6 module technology, including the nature of the manufacturing process, the operating and maintenance cost profile of the manufacturing equipment, and the technology's compatibility with our long-term module technology roadmap. We expect the revised useful lives to reduce depreciation by approximately $15.0 million per year. Depreciation of property, plant and equipment was $176.4 million, $109.1 million, and $91.4 million for the years ended December 31, 2019, 2018, and 2017, respectively.

PV solar power systems, net

PV solar power systems, net consisted of the following at December 31, 2019 and 2018 (in thousands):

	2019	2018
PV solar power systems, gross	$ 530,004	$ 343,061
Accumulated depreciation	(53,027)	(34,421)
PV solar power systems, net	$ 476,977	$ 308,640

Depreciation of PV solar power systems was $18.7 million, $15.3 million, and $19.8 million for the years ended December 31, 2019, 2018, and 2017, respectively.

Project assets

Project assets consisted of the following at December 31, 2019 and 2018 (in thousands):

	2019	2018
Project assets – development costs, including project acquisition and land costs	$ 254,466	$ 298,070
Project assets – construction costs	82,654	200,359
Project assets	337,120	498,429
Project assets – current	$ 3,524	$ 37,930
Project assets – noncurrent	$ 333,596	$ 460,499

Capitalized interest

The components of interest expense and capitalized interest were as follows during the years ended December 31, 2019, 2018, and 2017 (in thousands):

	2019	2018	2017
Interest cost incurred	$ (29,656)	$ (31,752)	$ (27,457)
Interest cost capitalized – project assets	2,590	5,831	1,692
Interest expense, net	$ (27,066)	$ (25,921)	$ (25,765)

Other assets

Other assets consisted of the following at December 31, 2019 and 2018 (in thousands):

	2019	2018
Operating lease assets (1)	$ 145,711	$ —
Indirect tax receivables	9,446	22,487
Notes receivable (2)	8,194	8,017
Income taxes receivable	4,106	4,444
Equity method investments (3)	2,812	3,186
Derivative instruments (4)	139	—
Deferred rent	—	27,249
Other	79,446	33,495
Other assets	$ 249,854	$ 98,878

(1) See Note 10. "Leases" to our consolidated financial statements for discussion of our lease arrangements.

(2) In April 2009, we entered into a credit facility agreement with a solar power project entity of one of our customers for an available amount of €17.5 million to provide financing for a PV solar power system. The credit facility bears interest at 8.0% per annum, payable quarterly, with the full amount due in December 2026. As of December 31, 2019 and 2018, the balance outstanding on the credit facility was €7.0 million ($7.8 million and $8.0 million, respectively).

(3) In June 2015, 8point3 Energy Partners LP (the "Partnership"), a limited partnership formed by First Solar and SunPower Corporation (collectively the "Sponsors"), completed its initial public offering (the "IPO"). As part of the IPO, the Sponsors contributed interests in various projects to OpCo in exchange for voting and economic interests in the entity, and the Partnership acquired an economic interest in OpCo using proceeds from the IPO.

In June 2018, we completed the sale of our interests in the Partnership and its subsidiaries to CD Clean Energy and Infrastructure V JV, LLC, an equity fund managed by Capital Dynamics, Inc. and certain other co-investors and other parties, and received net proceeds of $240.0 million after the payment of fees, expenses, and other amounts. We accounted for our interests in OpCo, a subsidiary of the Partnership, under the equity method of accounting as we were able to exercise significant influence over the Partnership due to our representation on the board of directors of its general partner and certain of our associates serving as officers of its general partner. During the year ended December 31, 2018, we recognized equity in earnings, net of tax, of $39.7 million from our investment in OpCo, including a gain of $40.3 million, net of tax, for the sale of our interests in the Partnership and its subsidiaries. During the year ended December 31, 2018, we received distributions from OpCo of $12.4 million.

In connection with the IPO, we also entered into an agreement with a subsidiary of the Partnership to lease back one of our originally contributed projects, Maryland Solar, until December 31, 2019. Under the terms of the agreement, we made fixed rent payments to the Partnership's subsidiary and were entitled to all of the energy generated by the project. Due to certain continuing involvement with the project, we accounted for the leaseback agreement as a financing transaction until the sale of our interests in the Partnership and its subsidiaries in June 2018. Following the sale of such interests, the Maryland Solar project qualified for sale-leaseback accounting, and we recognized net revenue of $32.0 million from the sale of the project.

(4) See Note 9. “Derivative Financial Instruments” to our consolidated financial statements for discussion of our derivative instruments.

Accrued expenses

Accrued expenses consisted of the following at December 31, 2019 and 2018 (in thousands):

	2019	2018
Accrued project costs	$ 91,971	$ 147,162
Accrued compensation and benefits	65,170	41,937
Accrued property, plant and equipment	42,834	89,905
Accrued inventory	39,366	53,075
Product warranty liability (1)	20,291	27,657
Other	91,628	81,844
Accrued expenses	$ 351,260	$ 441,580

(1)See Note 14. “Commitments and Contingencies” to our consolidated financial statements for discussion of our “Product warranty liability.”

Other current liabilities

Other current liabilities consisted of the following at December 31, 2019 and 2018 (in thousands):

	2019	2018
Operating lease liabilities (1)	$ 11,102	$ —
Derivative instruments (2)	2,582	7,294
Contingent consideration (3)	2,395	665
Other	12,051	6,421
Other current liabilities	$ 28,130	$ 14,380

(1) See Note 10. "Leases" to our consolidated financial statements for discussion of our lease arrangements.

(2) See Note 9. “Derivative Financial Instruments” to our consolidated financial statements for discussion of our derivative instruments.

(3) See Note 14. “Commitments and Contingencies” to our consolidated financial statements for discussion of our “Contingent consideration” arrangements.

Other liabilities

Other liabilities consisted of the following at December 31, 2019 and 2018 (in thousands):

	2019	2018
Operating lease liabilities (1)	$ 112,515	$ —
Product warranty liability (2)	109,506	193,035
Other taxes payable	90,201	83,058
Deferred revenue	71,438	48,014
Transition tax liability (3)	70,047	77,016
Derivative instruments (4)	7,439	9,205
Contingent consideration (2)	4,500	2,250
Other	43,120	55,261
Other liabilities	$ 508,766	$ 467,839

(1) See Note 10. "Leases" to our consolidated financial statements for discussion of our lease arrangements.

(2) See Note 14. “Commitments and Contingencies” to our consolidated financial statements for discussion of our “Product warranty liability” and “Contingent consideration” arrangements.

(3) See Note 18. “Income Taxes” to our consolidated financial statements for discussion of the one-time transition tax on accumulated earnings of foreign subsidiaries as a result of the Tax Act.

(4) See Note 9. “Derivative Financial Instruments” to our consolidated financial statements for discussion of our derivative instruments.

9. Derivative Financial Instruments

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

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

The following tables present the fair values of derivative instruments included in our consolidated balance sheets as of December 31, 2019 and 2018 (in thousands):

	December 31, 2019			
	Prepaid Expenses and Other Current Assets	Other Assets	Other Current Liabilities	Other Liabilities
Derivatives designated as hedging instruments:				
Foreign exchange forward contracts	$ 226	$ 139	$ 369	$ 230
Total derivatives designated as hedging instruments	$ 226	$ 139	$ 369	$ 230
Derivatives not designated as hedging instruments:				
Foreign exchange forward contracts	$ 973	$ —	$ 1,807	$ —
Interest rate swap contracts	—	—	406	7,209
Total derivatives not designated as hedging instruments	$ 973	$ —	$ 2,213	$ 7,209
Total derivative instruments	$ 1,199	$ 139	$ 2,582	$ 7,439

	December 31, 2018		
	Prepaid Expenses and Other Current Assets	Other Current Liabilities	Other Liabilities
Derivatives designated as hedging instruments:			
Foreign exchange forward contracts	$ 158	$ —	$ —
Total derivatives designated as hedging instruments	$ 158	$ —	$ —
Derivatives not designated as hedging instruments:			
Foreign exchange forward contracts	$ 2,206	$ 7,096	$ —
Interest rate swap contracts	—	198	9,205
Total derivatives not designated as hedging instruments	$ 2,206	$ 7,294	$ 9,205
Total derivative instruments	$ 2,364	$ 7,294	$ 9,205

The following table presents the pretax amounts related to derivative instruments designated as cash flow hedges affecting accumulated other comprehensive income (loss) and our consolidated statements of operations for the years ended December 31, 2019, 2018, and 2017 (in thousands):

	Foreign Exchange Forward Contracts
Balance as of December 31, 2016	$ 2,556
Amounts recognized in other comprehensive income (loss)	(4,468)
Amounts reclassified to earnings impacting:	
Other income, net	189
Balance as of December 31, 2017	(1,723)
Amounts recognized in other comprehensive income (loss)	(3,760)
Amounts reclassified to earnings impacting:	
Net sales	1,698
Cost of sales	212
Foreign currency income (loss), net	5,448
Other income, net	(546)
Balance as of December 31, 2018	1,329
Amounts recognized in other comprehensive income (loss)	(1,086)
Amounts reclassified to earnings impacting:	
Net sales	(124)
Cost of sales	(1,081)
Balance as of December 31, 2019	$ (962)

We recorded no amounts related to ineffective portions of our derivative instruments designated as cash flow hedges during the years ended December 31, 2018 and 2017. During the year ended December 31, 2019, we recognized unrealized gains of $0.8 million within “Cost of sales” for amounts excluded from effectiveness testing from our foreign exchange forward contracts designated as cash flow hedges. During the years ended December 31, 2018 and 2017, we recognized unrealized gains of $0.5 million and $0.7 million, respectively, within “Other income, net” for amounts excluded from effectiveness testing for our foreign exchange forward contracts designated as cash flow hedges.

The following table presents gains and losses related to derivative instruments not designated as hedges affecting our consolidated statements of operations for the years ended December 31, 2019, 2018, and 2017 (in thousands):

		Amount of Gain (Loss) Recognized in Income		
	Income Statement Line Item	2019	2018	2017
Interest rate swap contracts	Cost of sales	$ (1,656)	$ —	$ —
Foreign exchange forward contracts	Foreign currency income (loss), net	3,716	12,113	(33,882)
Interest rate swap contracts	Interest expense, net	(8,532)	(8,643)	(5,932)

Interest Rate Risk

We primarily use interest rate swap contracts to mitigate our exposure to interest rate fluctuations associated with certain of our debt instruments. We do not use such swap contracts for speculative or trading purposes. During the years ended December 31, 2019, 2018, and 2017, the majority of our interest rate swap contracts related to project specific debt facilities. Such swap contracts did not qualify for accounting as cash flow hedges in accordance with ASC 815 due to our expectation to sell the associated projects before the maturity of their project specific debt financings and corresponding swap contracts. Accordingly, changes in the fair values of these swap contracts were recorded directly to "Interest expense, net."

In December 2019, FS Japan Project 31 GK, our indirectly wholly-owned subsidiary and project company, entered into an interest rate swap contract to hedge a portion of the floating rate term loan facility under the project's Anamizu Credit Facility (as defined in Note 13. "Debt" to our consolidated financial statements). Such swap had an initial notional value of ¥0.9 billion and entitled the project to receive a six-month floating TIBOR plus 0.70% interest rate while requiring the project to pay a fixed rate of 1.1925%. The notional amount of the interest rate swap contract is scheduled to proportionately adjust with the scheduled draws and principal payments on the underlying hedged debt. As of December 31, 2019, the notional value of the interest rate swap contract was ¥0.9 billion ($8.0 million).

In May 2018, FS NSW Project No 1 Finco Pty Ltd, our indirect wholly-owned subsidiary and project financing company, entered into various interest rate swap contracts to hedge the floating rate construction loan facility and a portion of the floating rate term loan facility under the associated project's Beryl Credit Facility (as defined in Note 13. "Debt" to our consolidated financial statements). The swaps had an initial aggregate notional value of AUD 42.4 million and, depending on the loan facility being hedged, entitled the project to receive one-month or three-month floating Bank Bill Swap Bid ("BBSY") interest rates while requiring the project to pay fixed rates of 2.0615% or 3.2020%. The notional amounts of the interest rate swap contracts are scheduled to proportionately adjust with the scheduled draws and principal payments on the underlying hedged debt. In June 2019, we completed the sale of our Beryl project, and its interest rate swap contracts and outstanding loan balance were assumed by the customer. As of December 31, 2018, the aggregate notional value of the interest rate swap contracts was AUD 103.4 million ($72.9 million).

In January 2017, FS Japan Project 12 GK, our indirect wholly-owned subsidiary and project company, entered into an interest rate swap contract to hedge a portion of the floating rate senior loan facility under the project's Ishikawa Credit Agreement (as defined in Note 13. "Debt" to our consolidated financial statements). Such swap had an initial notional value of ¥5.7 billion and entitled the project to receive a six-month floating TIBOR plus 0.75% interest rate while requiring the project to pay a fixed rate of 1.482%. The notional amount of the interest rate swap contract is scheduled to proportionately adjust with the scheduled draws and principal payments on the underlying hedged debt. As of December 31, 2019 and 2018, the notional value of the interest rate swap contract was ¥18.7 billion ($171.7 million) and ¥19.2 billion ($174.1 million), respectively.

Foreign Currency Risk

Cash Flow Exposure

We expect certain of our subsidiaries to have future cash flows that will be denominated in currencies other than the subsidiaries' functional currencies. Changes in the exchange rates between the functional currencies of our subsidiaries and the other currencies in which they transact will cause fluctuations in the cash flows we expect to receive or pay when these cash flows are realized or settled. Accordingly, we enter into foreign exchange forward contracts to hedge a portion of these forecasted cash flows. As of December 31, 2019 and 2018, these foreign exchange forward contracts hedged our forecasted cash flows for periods up to 22 months and 6 months, respectively. These foreign exchange forward contracts qualify for accounting as cash flow hedges in accordance with ASC 815, and we designated them as such. We report unrealized gains or losses on such contracts in "Accumulated other comprehensive loss" and subsequently reclassify applicable amounts into earnings when the hedged transaction occurs and impacts earnings. We determined that these derivative financial instruments were highly effective as cash flow hedges as of December 31, 2019 and 2018.

As of December 31, 2019 and 2018, the notional values associated with our foreign exchange forward contracts qualifying as cash flow hedges were as follows (notional amounts and U.S. dollar equivalents in millions):

	December 31, 2019	
Currency	**Notional Amount**	**USD Equivalent**
U.S. dollar (1)	$69.9	$69.9

	December 31, 2018	
Currency	**Notional Amount**	**USD Equivalent**
Australian dollar	AUD 8.8	$6.2

(1) These derivative instruments represent hedges of outstanding payables denominated in U.S. dollars at certain of our foreign subsidiaries whose functional currencies are other than the U.S. dollar.

In the following 12 months, we expect to reclassify to earnings $0.6 million of net unrealized losses related to forward contracts that are included in "Accumulated other comprehensive loss" at December 31, 2019 as we realize the earnings effects of the related forecasted transactions. The amount we ultimately record to earnings will depend on the actual exchange rates when we realize the related forecasted transactions.

Transaction Exposure and Economic Hedging

Many of our subsidiaries have assets and liabilities (primarily cash, receivables, deferred taxes, payables, accrued expenses, and solar module collection and recycling liabilities) that are denominated in currencies other than the subsidiaries' functional currencies. Changes in the exchange rates between the functional currencies of our subsidiaries and the other currencies in which these assets and liabilities are denominated will create fluctuations in our reported consolidated statements of operations and cash flows. We may enter into foreign exchange forward contracts or other financial instruments to economically hedge assets and liabilities against the effects of currency exchange rate fluctuations. The gains and losses on such foreign exchange forward contracts will economically offset all or part of the transaction gains and losses that we recognize in earnings on the related foreign currency denominated assets and liabilities.

We also enter into foreign exchange forward contracts to economically hedge balance sheet and other exposures related to transactions between certain of our subsidiaries and transactions with third parties. Such contracts are considered economic hedges and do not qualify for hedge accounting. Accordingly, we recognize gains or losses from the fluctuations in foreign exchange rates and the fair value of these derivative contracts in "Foreign currency income (loss), net" on our consolidated statements of operations.

As of December 31, 2019 and 2018, the notional values of our foreign exchange forward contracts that do not qualify for hedge accounting were as follows (notional amounts and U.S. dollar equivalents in millions):

		December 31, 2019	
Transaction	**Currency**	**Notional Amount**	**USD Equivalent**
Purchase	Australian dollar	AUD 14.9	$10.4
Sell	Australian dollar	AUD 11.1	$7.8
Purchase	Brazilian real	BRL 13.2	$3.3
Sell	Brazilian real	BRL 4.3	$1.1
Purchase	Canadian dollar	CAD 4.5	$3.4
Sell	Canadian dollar	CAD 1.6	$1.2
Purchase	Chilean peso	CLP 1,493.1	$2.0
Sell	Chilean peso	CLP 3,866.1	$5.1
Purchase	Euro	€86.1	$96.5
Sell	Euro	€116.3	$130.3
Sell	Indian rupee	INR 1,283.8	$18.0
Purchase	Japanese yen	¥3,625.5	$33.3
Sell	Japanese yen	¥23,089.5	$212.2
Purchase	Malaysian ringgit	MYR 88.6	$21.6
Sell	Malaysian ringgit	MYR 41.3	$10.1
Sell	Mexican peso	MXN 34.6	$1.8
Purchase	Singapore dollar	SGD 2.9	$2.2

		December 31, 2018	
Transaction	**Currency**	**Notional Amount**	**USD Equivalent**
Purchase	Australian dollar	AUD 2.1	$1.5
Sell	Australian dollar	AUD 52.9	$37.3
Purchase	Brazilian real	BRL 8.5	$2.2
Sell	Canadian dollar	CAD 2.9	$2.1
Sell	Chilean peso	CLP 3,506.6	$5.1
Purchase	Euro	€115.2	$131.9
Sell	Euro	€191.8	$219.7
Sell	Indian rupee	INR 789.2	$11.3
Purchase	Japanese yen	¥931.6	$8.4
Sell	Japanese yen	¥23,858.8	$216.2
Purchase	Malaysian ringgit	MYR 34.3	$8.3
Sell	Malaysian ringgit	MYR 53.8	$12.9
Sell	Mexican peso	MXN 37.3	$1.9
Purchase	Singapore dollar	SGD 3.8	$2.8

10. Leases

Our lease arrangements include land associated with our systems projects, our corporate and administrative offices, land for our international manufacturing facilities, and certain of our manufacturing equipment. Such leases primarily relate to assets located in the United States, Japan, Malaysia, and Vietnam.

The following table presents certain quantitative information related to our lease arrangements for the year ended and as of December 31, 2019 (in thousands):

	2019
Operating lease cost	$ 21,833
Variable lease cost	3,518
Short-term lease cost	7,511
Total lease cost	$ 32,862
Payments of amounts included in the measurement of operating lease liabilities	$ 21,678
Lease assets obtained in exchange for operating lease liabilities	$ 179,804

	December 31, 2019
Operating lease assets	$ 145,711
Operating lease liabilities – current	11,102
Operating lease liabilities – noncurrent	112,515
Weighted-average remaining lease term	15 years
Weighted-average discount rate	4.3%

As of December 31, 2019, the future payments associated with our lease liabilities were as follows (in thousands):

	Total Lease Liabilities
2020	$ 15,153
2021	14,868
2022	13,903
2023	13,491
2024	13,217
Thereafter	92,281
Total future payments	162,913
Less: interest	(39,296)
Total lease liabilities	$ 123,617

Our lease expense was $18.9 million and $22.1 million for the years ended December 31, 2018, and 2017, respectively.

11. Fair Value Measurements

The following is a description of the valuation techniques that we use to measure the fair value of assets and liabilities that we measure and report at fair value on a recurring basis:

- *Cash Equivalents.* At December 31, 2019 and 2018, our cash equivalents consisted of money market funds. We value our cash equivalents using observable inputs that reflect quoted prices for securities with identical characteristics, and accordingly, we classify the valuation techniques that use these inputs as Level 1.

- *Marketable Securities and Restricted Investments.* At December 31, 2019 and 2018, our marketable securities consisted of foreign debt, foreign government obligations, U.S. debt, and time deposits, and our restricted investments consisted of foreign and U.S. government obligations. We value our marketable securities and restricted investments using observable inputs that reflect quoted prices for securities with identical characteristics or quoted prices for securities with similar characteristics and other observable inputs (such as interest rates that are observable at commonly quoted intervals). Accordingly, we classify the valuation techniques that use these inputs as either Level 1 or Level 2 depending on the inputs used. We also consider the effect of our counterparties' credit standing in these fair value measurements.

- *Derivative Assets and Liabilities*. At December 31, 2019 and 2018, our derivative assets and liabilities consisted of foreign exchange forward contracts involving major currencies and interest rate swap contracts involving major interest rates. Since our derivative assets and liabilities are not traded on an exchange, we value them using standard industry valuation models. As applicable, these models project future cash flows and discount the amounts to a present value using market-based observable inputs, including interest rate curves, credit risk, foreign exchange rates, and forward and spot prices for currencies. These inputs are observable in active markets over the contract term of the derivative instruments we hold, and accordingly, we classify the valuation techniques as Level 2. In evaluating credit risk, we consider the effect of our counterparties' and our own credit standing in the fair value measurements of our derivative assets and liabilities, respectively.

At December 31, 2019 and 2018, the fair value measurements of our assets and liabilities measured on a recurring basis were as follows (in thousands):

		Fair Value Measurements at Reporting Date Using		
	December 31, 2019	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets:				
Cash equivalents:				
Money market funds	$ 7,322	$ 7,322	$ —	$ —
Marketable securities:				
Foreign debt	387,820	—	387,820	—
Foreign government obligations	22,011	—	22,011	—
U.S. debt	66,134	—	66,134	—
Time deposits	335,541	335,541	—	—
Restricted investments	223,785	—	223,785	—
Derivative assets	1,338	—	1,338	—
Total assets	$ 1,043,951	$ 342,863	$ 701,088	$ —
Liabilities:				
Derivative liabilities	$ 10,021	$ —	$ 10,021	$ —

	December 31, 2018	Fair Value Measurements at Reporting Date Using: Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets:				
Cash equivalents:				
Money market funds	$ 200,788	$ 200,788	$ —	$ —
Marketable securities:				
Foreign debt	318,646	—	318,646	—
Foreign government obligations	98,621	—	98,621	—
U.S. debt	44,468	—	44,468	—
Time deposits	681,969	681,969	—	—
Restricted investments	179,000	—	179,000	—
Derivative assets	2,364	—	2,364	—
Total assets	$ 1,525,856	$ 882,757	$ 643,099	$ —
Liabilities:				
Derivative liabilities	$ 16,499	$ —	$ 16,499	$ —

Fair Value of Financial Instruments

At December 31, 2019 and 2018, the carrying values and fair values of our financial instruments not measured at fair value were as follows (in thousands):

	December 31, 2019		December 31, 2018	
	Carrying Value	Fair Value	Carrying Value	Fair Value
Assets:				
Notes receivable – current (1)	$ 23,873	$ 24,929	$ 5,196	$ 5,196
Notes receivable – noncurrent	8,194	10,276	8,017	8,010
Notes receivable, affiliates – noncurrent (1)	—	—	22,832	24,295
Liabilities:				
Long-term debt, including current maturities (2)	$ 482,892	$ 504,213	$ 479,157	$ 470,124

(1) In January 2019, CEC no longer qualified to be accounted for under the equity method, and our loans to the company were no longer classified as notes receivable from an affiliate. As of December 31, 2019, the aggregate balance outstanding on the loans was presented within “Prepaid expenses and other current assets.” As of December 31, 2018, the aggregate balance outstanding on the loans was presented within “Notes receivable, affiliate.”

(2) Excludes unamortized discounts and issuance costs.

The carrying values in our consolidated balance sheets of our trade accounts receivable, unbilled accounts receivable and retainage, restricted cash, accounts payable, and accrued expenses approximated their fair values due to their nature and relatively short maturities; therefore, we excluded them from the foregoing table. The fair value measurements for our notes receivable and long-term debt are considered Level 2 measurements under the fair value hierarchy.

Credit Risk

We have certain financial and derivative instruments that subject us to credit risk. These consist primarily of cash, cash equivalents, marketable securities, accounts receivable, restricted cash and investments, notes receivable, and foreign exchange forward contracts. We are exposed to credit losses in the event of nonperformance by the counterparties to our financial and derivative instruments. We place cash, cash equivalents, marketable securities, restricted cash and investments, and foreign exchange forward contracts with various high-quality financial institutions and limit the amount of credit risk from any one counterparty. We continuously evaluate the credit standing of our counterparty financial institutions.

From time to time, our net sales may be concentrated among a limited number of customers. We monitor the financial condition of our customers and perform credit evaluations whenever considered necessary. Depending upon the sales arrangement, we may require some form of payment security from our customers, including advance payments, parent guarantees, letters of credit, bank guarantees, or surety bonds. We also have PPAs that subject us to credit risk in the event our off-take counterparties are unable to fulfill their contractual obligations, which may adversely affect our project assets and certain receivables. Accordingly, we closely monitor the credit standing of existing and potential off-take counterparties to limit such risks.

12. Solar Module Collection and Recycling Liability

We previously established a module collection and recycling program, which has since been discontinued, to collect and recycle modules sold and covered under such program once the modules reach the end of their service lives. For legacy customer sales contracts that were covered under this program, we agreed to pay the costs for the collection and recycling of qualifying solar modules, and the end-users agreed to notify us, disassemble their solar power systems, package the solar modules for shipment, and revert ownership rights over the modules back to us at the end of the modules' service lives. Accordingly, we recorded any collection and recycling obligations within "Cost of sales" at the time of sale based on the estimated cost to collect and recycle the covered solar modules.

We estimate the cost of our collection and recycling obligations based on the present value of the expected probability-weighted future cost of collecting and recycling the solar modules, which includes estimates for the cost of packaging materials; the cost of freight from the solar module installation sites to a recycling center; material, labor, and capital costs; by-product credits for certain materials recovered during the recycling process; and an estimated third-party profit margin and return on risk for collection and recycling services. We base these estimates on our experience collecting and recycling solar modules and certain assumptions regarding costs at the time the solar modules will be collected and recycled. In the periods between the time of sale and the related settlement of the collection and recycling obligation, we accrete the carrying amount of the associated liability by applying the discount rate used for its initial measurement. We classify accretion as an operating expense within "Selling, general and administrative" expense on our consolidated statements of operations.

We periodically review our estimates of expected future recycling costs and may adjust our liability accordingly. During the year ended December 31, 2018, we completed our annual cost study of obligations under our module collection and recycling program and reduced the associated liability by $34.2 million primarily due to higher by-product credits for glass, lower capital costs resulting from the expanded scale of our recycling facilities, and adjustments to certain valuation assumptions driven by our increased experience with module recycling. During the year ended December 31, 2017, we reduced our module collection and recycling liability by $15.8 million primarily as a result of updates to several valuation assumptions, including a decrease in certain inflation rates.

Our module collection and recycling liability was $137.8 million and $134.4 million as of December 31, 2019 and 2018, respectively. During the year ended December 31, 2019, we recognized accretion expense of $4.9 million associated with this liability. During the year ended December 31, 2018, we recognized net benefits of $25.0 million to cost of sales and $2.9 million to accretion expense as a result of the reduction in our module collection and recycling liability described above. During the year ended December 31, 2017, we recognized a net benefit of $13.2 million to

cost of sales as a result of the reduction in our module collection and recycling liability described above, and net accretion expense of $3.9 million associated with the liability. As of December 31, 2019, a 1% increase in the annualized inflation rate used in our estimated future collection and recycling cost per module would increase the liability by $26.3 million, and a 1% decrease in that rate would decrease the liability by $22.3 million. See Note 7. "Restricted Cash and Investments" to our consolidated financial statements for more information about our arrangements for funding this liability.

13. Debt

Our long-term debt consisted of the following at December 31, 2019 and 2018 (in thousands):

		Balance (USD)	
Loan Agreement	**Currency**	**2019**	**2018**
Revolving Credit Facility	USD	$ —	$ —
Luz del Norte Credit Facilities	USD	188,017	188,849
Ishikawa Credit Agreement	JPY	215,879	157,834
Japan Credit Facility	JPY	1,678	—
Tochigi Credit Facility	JPY	37,304	25,468
Anamizu Credit Facility	JPY	12,138	—
Anantapur Credit Facility	INR	15,123	16,101
Tungabhadra Credit Facility	INR	12,753	13,934
Beryl Credit Facility	AUD	—	76,971
Long-term debt principal		482,892	479,157
Less: unamortized discounts and issuance costs		(11,195)	(12,366)
Total long-term debt		471,697	466,791
Less: current portion		(17,510)	(5,570)
Noncurrent portion		$ 454,187	$ 461,221

Revolving Credit Facility

Our amended and restated credit agreement with several financial institutions as lenders and JPMorgan Chase Bank, N.A. as administrative agent provides us with a senior secured credit facility (the "Revolving Credit Facility") with an aggregate borrowing capacity of $500.0 million, which we may increase to $750.0 million, subject to certain conditions. Borrowings under the credit facility bear interest at (i) London Interbank Offered Rate ("LIBOR"), adjusted for Eurocurrency reserve requirements, plus a margin of 2.00% or (ii) a base rate as defined in the credit agreement plus a margin of 1.00% depending on the type of borrowing requested. These margins are also subject to adjustment depending on our consolidated leverage ratio. We had no borrowings under our Revolving Credit Facility as of December 31, 2019 and 2018 and had issued $39.3 million and $66.0 million, respectively, of letters of credit using availability under the facility. Loans and letters of credit issued under the Revolving Credit Facility are jointly and severally guaranteed by First Solar, Inc.; First Solar Electric, LLC; First Solar Electric (California), Inc.; and First Solar Development, LLC and are secured by interests in substantially all of the guarantors' tangible and intangible assets other than certain excluded assets.

In addition to paying interest on outstanding principal under the Revolving Credit Facility, we are required to pay a commitment fee at a rate of 0.30% per annum, based on the average daily unused commitments under the facility, which may also be adjusted due to changes in our consolidated leverage ratio. We also pay a letter of credit fee based on the applicable margin for Eurocurrency revolving loans on the face amount of each letter of credit and a fronting fee of 0.125%. Our Revolving Credit Facility matures in July 2022.

Luz del Norte Credit Facilities

In August 2014, Parque Solar Fotovoltaico Luz del Norte SpA ("Luz del Norte"), our indirect wholly-owned subsidiary and project company, entered into credit facilities (the "Luz del Norte Credit Facilities") with the U.S. International Development Finance Corporation ("DFC") (previously known as the Overseas Private Investment Corporation) and the International Finance Corporation ("IFC") to provide limited-recourse senior secured debt financing for the design, development, financing, construction, testing, commissioning, operation, and maintenance of a 141 MW_{AC} PV solar power plant located near Copiapó, Chile.

In March 2017, we amended the terms of the DFC and IFC credit facilities. Such amendments (i) allowed for the capitalization of accrued and unpaid interest through March 15, 2017, along with the capitalization of certain future interest payments as variable rate loans under the credit facilities, (ii) allowed for the conversion of certain fixed rate loans to variable rate loans upon scheduled repayment, (iii) extended the maturity of the DFC and IFC loans until June 2037, and (iv) canceled the remaining borrowing capacity under the DFC and IFC credit facilities with the exception of the capitalization of certain future interest payments. As of December 31, 2019 and 2018, the balance outstanding on the DFC loans was $140.8 million and $141.4 million, respectively. As of December 31, 2019 and 2018, the balance outstanding on the IFC loans was $47.2 million and $47.4 million, respectively. The DFC and IFC loans are secured by liens over all of Luz del Norte's assets and by a pledge of all of the equity interests in the entity.

Ishikawa Credit Agreement

In December 2016, FS Japan Project 12 GK ("Ishikawa"), our indirect wholly-owned subsidiary and project company, entered into a credit agreement (the "Ishikawa Credit Agreement") with Mizuho Bank, Ltd. for aggregate borrowings up to ¥27.3 billion ($233.9 million) for the development and construction of a 59 MW_{AC} PV solar power plant located in Ishikawa, Japan. The credit agreement consists of a ¥24.0 billion ($205.6 million) senior loan facility, a ¥2.1 billion ($18.0 million) consumption tax facility, and a ¥1.2 billion ($10.3 million) letter of credit facility. The senior loan facility matures in October 2036, and the consumption tax facility matures in April 2020. The credit agreement is secured by pledges of Ishikawa's assets, accounts, material project documents, and by the equity interests in the entity. As of December 31, 2019 and 2018, the balance outstanding on the credit agreement was $215.9 million and $157.8 million, respectively.

Japan Credit Facility

In September 2015, First Solar Japan GK, our wholly-owned subsidiary, entered into a construction loan facility with Mizuho Bank, Ltd. for borrowings up to ¥4.0 billion ($33.4 million) for the development and construction of utility-scale PV solar power plants in Japan (the "Japan Credit Facility"). Borrowings under the facility generally mature within 12 months following the completion of construction activities for each financed project. The facility is guaranteed by First Solar, Inc. and secured by pledges of certain projects' cash accounts and other rights in the projects. As of December 31, 2019 and 2018, the balance outstanding on the facility was $1.7 million and zero, respectively.

Tochigi Credit Facility

In June 2017, First Solar Japan GK, our wholly-owned subsidiary, entered into a term loan facility with Mizuho Bank, Ltd. for borrowings up to ¥7.0 billion ($62.2 million) for the development of utility-scale PV solar power plants in Japan (the "Tochigi Credit Facility"). The term loan facility matures in March 2021. The facility is guaranteed by First Solar, Inc. and secured by pledges of certain of First Solar Japan GK's accounts. As of December 31, 2019 and 2018, the balance outstanding on the term loan facility was $37.3 million and $25.5 million, respectively.

Anamizu Credit Facility

In December 2019, FS Japan Project 31 GK ("Anamizu"), our indirect wholly-owned subsidiary and project company, entered into a term loan facility (the "Anamizu Credit Facility") with MUFG Bank, Ltd.; The Iyo Bank, Ltd.; The Hachijuni Bank, Ltd.; The Hyakugo Bank, Ltd.; and The Yamagata Bank, Ltd. for aggregate borrowings up to ¥7.7 billion ($70.8 million) for the development and construction of a 17 MW_{AC} PV solar power plant located in Ishikawa, Japan. The credit agreement consists of a ¥6.6 billion ($61.0 million) term loan facility, a ¥0.7 billion ($6.5 million) consumption tax facility, and a ¥0.4 billion ($3.3 million) debt service reserve facility. The term loan facility matures in September 2038, the consumption tax facility matures in November 2022, and the debt service reserve facility matures in March 2038. The credit facility is secured by pledges of Anamizu's assets, accounts, material project documents, and by the equity interests in the entity. As of December 31, 2019, the balance outstanding on the term loan facility was $12.1 million.

Anantapur Credit Facility

In March 2018, Anantapur Solar Parks Private Limited, our indirect wholly-owned subsidiary and project company, entered into a term loan facility (the "Anantapur Credit Facility") with J.P. Morgan Securities India Private Limited for borrowings up to INR 1.2 billion ($18.4 million) for costs related to a 20 MW_{AC} PV solar power plant located in Karnataka, India. The term loan facility matures in February 2021 and is secured by a letter of credit issued by JPMorgan Chase Bank, N.A., Singapore, in favor of the lender. Such letter of credit is secured by a cash deposit placed by First Solar FE Holdings Pte. Ltd. As of December 31, 2019 and 2018, the balance outstanding on the term loan facility was $15.1 million and $16.1 million, respectively.

Tungabhadra Credit Facility

In March 2018, Tungabhadra Solar Parks Private Limited, our indirect wholly-owned subsidiary and project company, entered into a term loan facility (the "Tungabhadra Credit Facility") with J.P. Morgan Securities India Private Limited for borrowings up to INR 1.0 billion ($15.3 million) for costs related to a 20 MW_{AC} PV solar power plant located in Karnataka, India. The term loan facility matures in February 2021 and is secured by a letter of credit issued by JPMorgan Chase Bank, N.A., Singapore, in favor of the lender. Such letter of credit is secured by a cash deposit placed by First Solar FE Holdings Pte. Ltd. As of December 31, 2019 and 2018, the balance outstanding on the term loan facility was $12.8 million and $13.9 million, respectively.

Beryl Credit Facility

In May 2018, FS NSW Project No 1 Finco Pty Ltd, our indirect wholly-owned subsidiary and project financing company, entered into a term loan facility (the "Beryl Credit Facility") with MUFG Bank, Ltd.; Société Générale, Hong Kong Branch; and Mizuho Bank, Ltd. for aggregate borrowings up to AUD 146.4 million ($108.1 million) for the development and construction of an 87 MW_{AC} PV solar power plant located in New South Wales, Australia. In October 2018, the borrowing capacity on the Beryl Credit Facility was reduced to AUD 136.4 million ($96.1 million). Accordingly, the credit facility consisted of an AUD 125.4 million ($88.4 million) construction loan facility, an AUD 7.0 million ($4.9 million) GST facility to fund certain taxes associated with the construction of the project, and an AUD 4.0 million ($2.8 million) letter of credit facility. In June 2019, we completed the sale of our Beryl project, and the outstanding balance of the Beryl Credit Facility of $88.0 million was assumed by the customer. As of December 31, 2018, the balance outstanding on the credit facility was $77.0 million.

Variable Interest Rate Risk

Certain of our long-term debt agreements bear interest at prime, LIBOR, TIBOR, BBSY, or equivalent variable rates. An increase in these variable rates would increase the cost of borrowing under our Revolving Credit Facility and certain project specific debt financings. Our long-term debt borrowing rates as of December 31, 2019 were as follows:

Loan Agreement	December 31, 2019
Revolving Credit Facility	3.76%
Luz del Norte Credit Facilities (1)	Fixed rate loans at bank rate plus 3.50% Variable rate loans at 91-Day U.S. Treasury Bill Yield or LIBOR plus 3.50%
Ishikawa Credit Agreement	Senior loan facility at 6-month TIBOR plus 0.75% (2) Consumption tax facility at 3-month TIBOR plus 0.5%
Japan Credit Facility	1-month TIBOR plus 0.55%
Tochigi Credit Facility	3-month TIBOR plus 1.0%
Anamizu Credit Facility	Term loan facility at 6-month TIBOR plus 0.70% (2) Consumption tax facility at 3-month TIBOR plus 0.5% Debt service reserve facility at 6-month TIBOR plus 1.20%
Anantapur Credit Facility	INR overnight indexed swap rate plus 1.5%
Tungabhadra Credit Facility	INR overnight indexed swap rate plus 1.5%

(1) Outstanding balance comprised of $155.8 million of fixed rate loans and $32.2 million of variable rate loans as of December 31, 2019.

(2) We have entered into interest rate swap contracts to hedge portions of these variable rates. See Note 9. “Derivative Financial Instruments” to our consolidated financial statements for additional information.

During the years ended December 31, 2019, 2018, and 2017, we paid $18.8 million, $16.6 million, and $10.2 million, respectively, of interest related to our long-term debt arrangements.

Future Principal Payments

At December 31, 2019, the future principal payments on our long-term debt were due as follows (in thousands):

	Total Debt
2020	$ 17,684
2021	79,306
2022	19,265
2023	18,284
2024	19,212
Thereafter	329,141
Total long-term debt future principal payments	$ 482,892

14. Commitments and Contingencies

Commercial Commitments

During the normal course of business, we enter into commercial commitments in the form of letters of credit, bank guarantees, and surety bonds to provide financial and performance assurance to third parties. Our amended and restated Revolving Credit Facility provides us with a sub-limit of $400.0 million to issue letters of credit, subject to certain additional limits depending on the currencies of the letters of credit, at a fee based on the applicable margin for Eurocurrency revolving loans and a fronting fee. As of December 31, 2019, we had $39.3 million in letters of credit issued under our Revolving Credit Facility, leaving $360.7 million of availability for the issuance of additional letters of credit. As of December 31, 2019, we also had $9.8 million of letters of credit under separate agreements that were posted by certain of our foreign subsidiaries and $156.9 million of letters of credit issued under three bilateral facilities, of which $31.8 million was secured with cash, leaving $608.5 million of aggregate available capacity under such agreements and facilities. We also had $89.8 million of surety bonds outstanding, leaving $626.4 million of available bonding capacity under our surety lines as of December 31, 2019. The majority of these letters of credit and surety bonds supported our systems projects.

Purchase Commitments

We purchase raw materials, manufacturing equipment, and various services from a variety of vendors. During the normal course of business, in order to manage manufacturing lead times and help ensure an adequate supply of certain items, we enter into agreements with suppliers that either allow us to procure goods and services when we choose or that establish purchase requirements over the term of the agreement. In certain instances, our purchase agreements allow us to cancel, reschedule, or adjust our purchase requirements based on our business needs prior to firm orders being placed. Consequently, only a portion of our purchase commitments are firm and noncancelable or cancelable with a significant penalty. As of December 31, 2019, our obligations under such arrangements were $1.4 billion, of which $0.4 billion related to capital expenditures. We expect to make $0.9 billion of payments under these purchase obligations in 2020.

Product Warranties

When we recognize revenue for module or system sales, we accrue liabilities for the estimated future costs of meeting our limited warranty obligations for both modules and the balance of the systems. We make and revise these estimates based primarily on the number of solar modules under warranty installed at customer locations, our historical experience with and projections of warranty claims, and our estimated per-module replacement costs. We also monitor our expected future module performance through certain quality and reliability testing and actual performance in certain field installation sites. From time to time, we have taken remediation actions with respect to affected modules beyond our limited warranties and may elect to do so in the future, in which case we would incur additional expenses. Such potential voluntary future remediation actions beyond our limited warranty obligations may be material to our consolidated statements of operations if we commit to any such remediation actions.

Product warranty activities during the years ended December 31, 2019, 2018, and 2017 were as follows (in thousands):

	2019	2018	2017
Product warranty liability, beginning of period	$ 220,692	$ 224,274	$ 252,408
Accruals for new warranties issued	17,327	14,132	23,313
Settlements	(22,540)	(11,851)	(11,329)
Changes in estimate of product warranty liability	(85,682)	(5,863)	(40,118)
Product warranty liability, end of period	$ 129,797	$ 220,692	$ 224,274
Current portion of warranty liability	$ 20,291	$ 27,657	$ 28,767
Noncurrent portion of warranty liability	$ 109,506	$ 193,035	$ 195,507

We estimate our limited product warranty liability for power output and defects in materials and workmanship under normal use and service conditions based on return rates for each series of module technology. During the year ended December 31, 2019, we revised this estimate downward based on updated information regarding our warranty claims, which reduced our product warranty liability by $80.0 million. This updated information reflected lower-than-expected return rates for our newer series of module technology, the evolving claims profile of each series, and certain changes to our warranty programs. During the year ended December 31, 2017, we reduced our product warranty liability by $31.3 million as a result of a reduction in the estimated replacement cost of our modules under warranty. Such change in estimate was primarily driven by continued reductions in the manufacturing cost per watt of our solar modules.

In general, we expect the return rates for our newer series of module technology to be lower than our older series. We estimate that the return rate for such newer series of module technology will be less than 1%. As of December 31, 2019, a 1% increase in the return rate across all series of module technology would increase our product warranty liability by $89.8 million, and a 1% increase in the return rate for BoS parts would not have a material impact on the associated warranty liability.

Performance Guarantees

As part of our systems business, we conduct performance testing of a system prior to substantial completion to confirm the system meets its operational and capacity expectations noted in the EPC agreement. In addition, we may provide an energy performance test during the first or second year of a system's operation to demonstrate that the actual energy generation for the applicable period meets or exceeds the modeled energy expectation, after certain adjustments. If there is an underperformance event with regards to these tests, we may incur liquidated damages as specified in the EPC agreement. In certain instances, a bonus payment may be received at the end of the applicable test period if the system performs above a specified level. As of December 31, 2019 and 2018, we accrued $4.6 million and $0.4 million, respectively, for our estimated obligations under such arrangements, which were classified as "Other current liabilities" in our consolidated balance sheets.

As part of our O&M service offerings, we typically offer an effective availability guarantee, which stipulates that a system will be available to generate a certain percentage of total possible energy during a specific period after adjusting for factors outside our control as the service provider, such as weather, curtailment, outages, force majeure, and other conditions that may affect system availability. Effective availability guarantees are only offered as part of our O&M services and terminate at the end of an O&M arrangement. If we fail to meet the contractual threshold for these guarantees, we may incur liquidated damages for certain lost energy. Our O&M agreements typically contain provisions limiting our total potential losses under an agreement, including amounts paid for liquidated damages, to a percentage of O&M fees. Many of our O&M agreements also contain provisions whereby we may receive a bonus payment if system availability exceeds a separate threshold. As of December 31, 2019, we accrued $0.6 million of liquidated damages under our effective availability guarantees, which were classified as "Other current liabilities" in our consolidated balance sheets.

Indemnifications

In certain limited circumstances, we have provided indemnifications to customers, including project tax equity investors, under which we are contractually obligated to compensate such parties for losses they suffer resulting from a breach of a representation, warranty, or covenant or a reduction in tax benefits received, including investment tax credits. Project related tax benefits are, in part, based on guidance provided by the IRS and U.S. Treasury Department, which includes assumptions regarding the fair value of qualifying PV solar power systems. For any sales contracts that have such indemnification provisions, we initially recognize a liability under ASC 460 for the estimated premium that would be required by a guarantor to issue the same indemnity in a standalone arm's-length transaction with an unrelated party. We typically base these estimates on the cost of insurance policies that cover the underlying risks being indemnified and may purchase such policies to mitigate our exposure to potential indemnification payments. We subsequently measure such liabilities at the greater of the initially estimated premium or the contingent liability required to be

recognized under ASC 450. We recognize any indemnification liabilities as a reduction of revenue in the related transaction.

After an indemnification liability is recorded, we derecognize such amount pursuant to ASC 460-10-35-2 depending on the nature of the indemnity, which derecognition typically occurs upon expiration or settlement of the arrangement, and any contingent aspects of the indemnity are accounted for in accordance with ASC 450. We accrued $0.8 million of current indemnification liabilities as of December 31, 2019. We also accrued $4.2 million and $3.0 million of noncurrent indemnification liabilities, respectively, as of December 31, 2019 and 2018. As of December 31, 2019, the maximum potential amount of future payments under our tax related and other indemnifications was $152.8 million, and we held insurance policies allowing us to recover up to $84.9 million of potential amounts paid under the indemnifications covered by the policies.

Contingent Consideration

We may seek to make additions to our advanced-stage project pipeline by actively developing our early-to-mid-stage project pipeline and by pursuing opportunities to acquire projects at various stages of development. In connection with such project acquisitions, we may agree to pay additional amounts to project sellers upon the achievement of certain milestones, such as obtaining a PPA, obtaining financing, or selling the project to a new owner. We recognize a project acquisition contingent liability when we determine that such a liability is both probable and reasonably estimable, and the carrying amount of the related project asset is correspondingly increased. As of December 31, 2019 and 2018, we accrued $2.4 million and $0.7 million of current liabilities, respectively, and $4.5 million and $2.3 million of long-term liabilities, respectively, for project related contingent obligations. Any future differences between the acquisition-date contingent obligation estimate and the ultimate settlement of the obligation are recognized as an adjustment to the project asset, as contingent payments are considered direct and incremental to the underlying value of the related project.

Legal Proceedings

Class Action

On March 15, 2012, a purported class action lawsuit titled Smilovits v. First Solar, Inc., et al., Case No. 2:12-cv-00555-DGC, was filed in the United States District Court for the District of Arizona against the Company and certain of our current and former directors and officers. The complaint was filed on behalf of persons who purchased or otherwise acquired the Company's publicly traded securities between April 30, 2008 and February 28, 2012 (the "Class Action"). The complaint generally alleged that the defendants violated Sections 10(b) and 20(a) of the Securities Exchange Act of 1934 by making false and misleading statements regarding the Company's financial performance and prospects. The action included claims for damages, including interest, and an award of reasonable costs and attorneys' fees to the putative class.

On July 23, 2012, the Arizona District Court issued an order appointing as lead plaintiffs in the Class Action the Mineworkers' Pension Scheme and British Coal Staff Superannuation Scheme (collectively, the "Pension Schemes"). The Pension Schemes filed an amended complaint on August 17, 2012, which contains similar allegations and seeks similar relief as the original complaint. Defendants filed a motion to dismiss on September 14, 2012. On December 17, 2012, the court denied defendants' motion to dismiss. On October 8, 2013, the Arizona District Court granted the Pension Schemes' motion for class certification and certified a class comprised of all persons who purchased or otherwise acquired publicly traded securities of the Company between April 30, 2008 and February 28, 2012 and were damaged thereby, excluding defendants and certain related parties. Merits discovery closed on February 27, 2015.

Defendants filed a motion for summary judgment on March 27, 2015. On August 11, 2015, the Arizona District Court granted defendants' motion in part and denied it in part, and certified an issue for immediate appeal to the Ninth Circuit Court of Appeals (the "Ninth Circuit"). First Solar filed a petition for interlocutory appeal with the Ninth Circuit, and that petition was granted on November 18, 2015. On May 20, 2016, the Pension Schemes moved to vacate the order granting the petition, dismiss the appeal, and stay the merits briefing schedule. On December 13, 2016, the Ninth Circuit

denied the Pension Schemes' motion. On January 31, 2018, the Ninth Circuit issued an opinion affirming the Arizona District Court's order denying in part defendants' motion for summary judgment. On March 16, 2018, First Solar filed a petition for panel rehearing or rehearing en banc with the Ninth Circuit. On May 7, 2018, the Ninth Circuit denied defendants' petition. On August 6, 2018, defendants filed a petition for writ of certiorari to the U.S. Supreme Court. Meanwhile, in the Arizona District Court, expert discovery was completed on February 5, 2019. On June 24, 2019, the U.S. Supreme Court denied the petition. Following the denial of the petition, the Arizona District Court ordered that the trial begin on January 7, 2020.

On January 5, 2020, First Solar entered into an MOU to settle the Class Action. First Solar agreed to pay a total of $350 million to settle the claims in the Class Action brought on behalf of all persons who purchased or otherwise acquired the Company's shares between April 30, 2008 and February 28, 2012, in exchange for mutual releases and a dismissal with prejudice of the complaint upon court approval of the settlement. The proposed settlement contains no admission of liability, wrongdoing, or responsibility by any of the parties. As a result of the entry into the MOU, we accrued a loss for the above-referenced settlement in our results of operations for the year ended December 31, 2019. On February 13, 2020, First Solar entered into a stipulation of settlement with certain named plaintiffs on terms and conditions that are consistent with the MOU. On February 14, 2020, the lead plaintiffs filed a motion for preliminary approval of the settlement. The settlement is subject to approval by the Arizona District Court on a schedule to be determined by the court.

Opt-Out Action

On June 23, 2015, a suit titled Maverick Fund, L.D.C. v. First Solar, Inc., et al., Case No. 2:15-cv-01156-ROS, was filed in Arizona District Court by putative stockholders that opted out of the Class Action. The complaint names the Company and certain of our current and former directors and officers as defendants, and alleges that the defendants violated Sections 10(b) and 20(a) of the Securities Exchange Act of 1934, and violated state law, by making false and misleading statements regarding the Company's financial performance and prospects. The action includes claims for recessionary and actual damages, interest, punitive damages, and an award of reasonable attorneys' fees, expert fees, and costs. The Company believes it has meritorious defenses and will vigorously defend this action.

First Solar and the individual defendants filed a motion to dismiss the complaint on July 16, 2018. On November 27, 2018, the Court granted defendants' motion to dismiss the plaintiffs' negligent misrepresentation claim under state law, but otherwise denied defendants' motion. The plaintiffs have argued that the action is unique from the Class Action and have sought additional discovery. Fact discovery is scheduled to be complete by June 5, 2020, and expert discovery is scheduled to be complete by October 23, 2020. As of December 31, 2019, we accrued $13 million of estimated losses for this action, which represents our best estimate of the lower bound of the costs to resolve this case. The ultimate amount of loss may be materially higher.

Derivative Actions

On July 16, 2013, a derivative complaint was filed in the Superior Court of Arizona, Maricopa County, titled Bargar, et al. v. Ahearn, et al., Case No. CV2013-009938, by a putative stockholder against certain current and former directors and officers of the Company ("Bargar"). The complaint generally alleges that the defendants caused or allowed false and misleading statements to be made concerning the Company's financial performance and prospects. The action includes claims for, among other things, breach of fiduciary duties, insider trading, unjust enrichment, and waste of corporate assets. By court order on October 3, 2013, the Superior Court of Arizona, Maricopa County granted the parties' stipulation to defer defendants' response to the complaint pending resolution of the Class Action or expiration of a stay issued in certain consolidated derivative actions in the Arizona District Court. On November 5, 2013, the matter was placed on the court's inactive calendar. The parties have jointly sought and obtained multiple requests to continue the stay in this action. Most recently, on November 6, 2019, the court entered an order continuing the stay until March 31, 2020. On December 5, 2019, the court granted a motion by one of two named plaintiffs to voluntarily dismiss that plaintiff's claims; one named plaintiff remains in the case.

The Company believes that the plaintiff in the Bargar derivative action lacks standing to pursue litigation on behalf of First Solar. The Bargar derivative action is still in the initial stages and there has been no discovery. Accordingly, at this time we are not in a position to assess the likelihood of any potential loss or adverse effect on our financial condition or to estimate the range of potential loss, if any.

Other Matters and Claims

We are party to other legal matters and claims in the normal course of our operations. While we believe the ultimate outcome of such other matters and claims will not have a material adverse effect on our financial position, results of operations, or cash flows, the outcome of such matters and claims is not determinable with certainty, and negative outcomes may adversely affect us.

15. Revenue from Contracts with Customers

The following table represents a disaggregation of revenue from contracts with customers for the years ended December 31, 2019, 2018, and 2017 along with the reportable segment for each category (in thousands):

Category	Segment	2019	2018	2017
Solar modules	Modules	$ 1,460,116	$ 502,001	$ 806,398
Solar power systems	Systems	1,148,856	1,244,175	1,927,122
EPC services	Systems	291,901	347,560	45,525
O&M services	Systems	107,705	103,186	101,024
Energy generation (1)	Systems	54,539	47,122	58,019
Module plus	Systems	—	—	3,236
Net sales		$ 3,063,117	$ 2,244,044	$ 2,941,324

(1) During the year ended December 31, 2017, the majority of energy generated and sold by our PV solar power systems was accounted for under ASC 840 consistent with the classification of the associated PPAs.

We recognize revenue for module sales at a point in time following the transfer of control of the modules to the customer, which typically occurs upon shipment or delivery depending on the terms of the underlying contracts. Such contracts may contain provisions that require us to make liquidated damage payments to the customer if we fail to ship or deliver modules by scheduled dates. We recognize these liquidated damages as a reduction of revenue in the period we transfer control of the modules to the customer.

For certain sales of solar power systems and/or EPC services, we recognize revenue over time using cost based input methods, in which significant judgment is required to evaluate assumptions including the amount of net contract revenues and the total estimated costs to determine our progress toward contract completion. If the estimated total costs on any contract are greater than the net contract revenues, we recognize the entire estimated loss in the period the loss becomes known. The cumulative effect of revisions to estimates related to net contract revenues or costs to complete contracts are recorded in the period in which the revisions to estimates are identified and the amounts can be reasonably estimated.

Changes in estimates for sales of systems and EPC services occur for a variety of reasons, including but not limited to (i) construction plan accelerations or delays, (ii) module cost forecast changes, (iii) cost related change orders, or (iv) changes in other information used to estimate costs. Changes in estimates may have a material effect on our consolidated statements of operations.

The following table outlines the impact on revenue of net changes in estimated transaction prices and input costs for systems related sales contracts (both increases and decreases) for the years ended December 31, 2019, 2018, and 2017 as well as the number of projects that comprise such changes. For purposes of the table, we only include projects with changes in estimates that have a net impact on revenue of at least $1.0 million during the periods presented with the exception of the sales and use tax matter described below, for which the aggregate change in estimate has been presented. Also included in the table is the net change in estimate as a percentage of the aggregate revenue for such projects.

	2019	2018	2017
Number of projects (1)	3	24	5
(Decrease) increase in revenue from net changes in transaction prices (in thousands) (1)	$ (3,642)	$ 63,361	$ 3,579
(Decrease) increase in revenue from net changes in input cost estimates (in thousands)	(23,103)	1,548	5,047
Net (decrease) increase in revenue from net changes in estimates (in thousands)	$ (26,745)	$ 64,909	$ 8,626
Net change in estimate as a percentage of aggregate revenue	(4.6)%	0.6%	0.6%

(1) During the year ended December 31, 2018, we settled a tax examination with the state of California regarding several matters, including certain sales and use tax payments due under lump sum EPC contracts. Accordingly, we revised our estimates of sales and use taxes due for projects in the state of California, which affected the estimated transaction prices for such contracts, and recorded an increase to revenue of $54.6 million.

The following table reflects the changes in our contract assets, which we classify as "Accounts receivable, unbilled" or "Retainage," and our contract liabilities, which we classify as "Deferred revenue," for the year ended December 31, 2019 (in thousands):

	2019	2018	Change	
Accounts receivable, unbilled	$ 162,057	$ 441,666		
Retainage	21,416	16,500		
Accounts receivable, unbilled and retainage	$ 183,473	$ 458,166	$ (274,693)	(60)%
Deferred revenue (1)	$ 394,655	$ 177,769	$ 216,886	122 %

(1) Includes $71.4 million and $48.0 million of long-term deferred revenue classified as "Other liabilities" on our consolidated balance sheets as of December 31, 2019 and 2018, respectively.

For the year ended December 31, 2019, our contract assets decreased by $274.7 million primarily due to billings on the California Flats and Willow Springs projects following the completion of substantially all construction activities and final billings on the Manildra project, which we sold in 2018, partially offset by certain unbilled receivables associated with the sale of the Sun Streams and Sunshine Valley projects and ongoing construction activities at the GA Solar 4 and Phoebe projects. For the year ended December 31, 2019, our contract liabilities increased by $216.9 million primarily as a result of advance payments received for sales of solar modules prior to the step down in the U.S. investment tax credit. During the years ended December 31, 2019 and 2018, we recognized revenue of $117.7 million and $128.7 million, respectively, that was included in the corresponding contract liability balance at the beginning of the periods.

The following table represents our remaining performance obligations as of December 31, 2019 for sales of solar power systems, including uncompleted sold projects and projects under sales contracts subject to conditions precedent. Such table excludes remaining performance obligations for any sales arrangements that had not fully satisfied the criteria to be considered a contract with a customer pursuant to the requirements of ASC 606. We expect to recognize $116.0 million of revenue for such contracts through the later of the substantial completion or the closing dates of the projects.

Project/Location	Project Size in MW_{AC}	Revenue Category	Customer	Expected Year Revenue Recognition Will Be Completed	Percentage of Revenue Recognized
GA Solar 4, Georgia	200	Solar power systems	Origis Energy USA	2020	67%
Sun Streams, Arizona	150	Solar power systems	(1)	2020	94%
Sunshine Valley, Nevada	100	Solar power systems	(1)	2020	96%
Seabrook, South Carolina	72	Solar power systems	Dominion Energy	2020	94%
Japan (multiple locations)	52	Solar power systems	(2)	2020	—%
Windhub A, California	20	Solar power systems	(1)	2020	96%
Total	594				

(1) EDP Renewables and ConnectGen

(2) Contracted but not specified

As of December 31, 2019, we had entered into contracts with customers for the future sale of 11.6 GW_{DC} of solar modules for an aggregate transaction price of $3.9 billion. We expect to recognize such amounts as revenue through 2023 as we transfer control of the modules to the customers. While our contracts with customers typically have certain firm purchase commitments, these contracts may be subject to amendments made by us or requested by our customers. These amendments may increase or decrease the volume of modules to be sold under the contract, change delivery schedules, or otherwise adjust the expected revenue under these contracts. In June 2019 and November 2019, we amended certain contracts with customers to reduce the aggregate volume under the contracts by approximately 0.3 GW_{DC} and 0.9 GW_{DC} respectively, as a result of negotiated amendments to make certain accommodations for the customers. As of December 31, 2019, we had entered into O&M contracts covering approximately 12 GW_{DC} of utility-scale PV solar power systems. We expect to recognize $0.5 billion of revenue during the noncancelable term of these O&M contracts over a weighted-average period of 9.2 years.

16. Stockholders' Equity

Preferred Stock

As of December 31, 2019 and 2018, we had authorized 30,000,000 shares of undesignated preferred stock, $0.001 par value, none of which was issued and outstanding. Our board of directors is authorized to determine the rights, preferences, and restrictions on any series of preferred stock that we may issue.

Common Stock

As of December 31, 2019 and 2018, we had authorized 500,000,000 shares of common stock, $0.001 par value, of which 105,448,921 and 104,885,261 shares, respectively, were issued and outstanding. Each share of common stock is entitled to a single vote. We have not declared or paid any dividends through December 31, 2019.

17. Share-Based Compensation

The following table presents share-based compensation expense recognized in our consolidated statements of operations for the years ended December 31, 2019, 2018, and 2017 (in thousands):

	2019	2018	2017
Cost of sales	$ 7,541	$ 6,422	$ 6,809
Selling, general and administrative	23,741	21,646	22,165
Research and development	5,917	5,714	5,740
Production start-up	230	372	407
Total share-based compensation expense	$ 37,429	$ 34,154	$ 35,121

Share-based compensation expense capitalized in inventory, project assets, and PV solar power systems was $1.2 million and $1.8 million as of December 31, 2019 and 2018, respectively. As of December 31, 2019, we had $35.6 million of unrecognized share-based compensation expense related to unvested restricted and performance stock units, which we expect to recognize over a weighted-average period of approximately one year. During the years ended December 31, 2019, 2018, and 2017, we recognized an income tax benefit in our statement of operations of $9.6 million, $9.9 million, and $6.2 million, respectively, related to share-based compensation expense, including any excess tax benefits or deficiencies. We authorize our transfer agent to issue new shares, net of shares withheld for taxes as appropriate, for the vesting of restricted and performance stock units or grants of unrestricted stock.

Share-Based Compensation Plans

During the year ended December 31, 2015, we adopted our 2015 Omnibus Incentive Compensation Plan ("the 2015 Omnibus Plan"), under which directors, officers, employees, and consultants of First Solar (including any of its subsidiaries) are eligible to participate in various forms of share-based compensation. The 2015 Omnibus Plan is administered by the compensation committee (or any other committee designated by our board of directors), which is authorized to, among other things, determine the recipients of grants, the exercise price, and the vesting schedule of any awards made under the 2015 Omnibus Plan. Our board of directors may amend, modify, or terminate the 2015 Omnibus Plan without the approval of our stockholders, except for amendments that would increase the maximum number of shares of our common stock available for awards under the 2015 Omnibus Plan, increase the maximum number of shares of our common stock that may be delivered by incentive stock options, or modify the requirements for participation in the 2015 Omnibus Plan.

The 2015 Omnibus Plan provides for the grant of incentive stock options, non-qualified stock options, stock appreciation rights, restricted shares, restricted stock units, performance units, cash incentive awards, performance compensation awards, and other equity-based and equity-related awards. In addition, the shares underlying any forfeited, expired, terminated, or canceled awards, or shares surrendered as payment for taxes required to be withheld, become available for new award grants. We may not grant awards under the 2015 Omnibus Plan after 2025, which is the tenth anniversary of the 2015 Omnibus Plan's approval by our stockholders. As of December 31, 2019, we had 2,524,342 shares available for future issuance under the 2015 Omnibus Plan.

Restricted and Performance Stock Units

We issue shares to the holders of restricted stock units on the date the restricted units vest. The majority of shares issued are net of applicable withholding taxes, which we pay on behalf of our associates. As a result, the actual number of shares issued will be less than the number of restricted stock units granted. Prior to vesting, restricted stock units do not have dividend equivalent rights or voting rights, and the shares underlying the restricted stock units are not considered issued and outstanding.

In February 2017, the compensation committee approved a long-term incentive program for key executive officers and associates. The program is intended to incentivize retention of our key executive talent, provide a smooth transition

from our former key senior talent equity performance program, and align the interests of executive management and stockholders. Specifically, the program consists of (i) performance stock units to be earned over an approximately three-year performance period, which ended in December 2019 and (ii) stub-year grants of separate performance stock units to be earned over an approximately two-year performance period, which ended in December 2018. In February 2019, the compensation committee certified the achievement of the maximum vesting conditions applicable for the stub-year grants. Accordingly, each participant received one share of common stock for each vested performance unit, net of any tax withholdings. Vesting of the remaining 2017 grants of performance stock units is contingent upon the relative attainment of target cost per watt and operating expense metrics, to be certified by the compensation committee.

In April 2018, in continuation of our long-term incentive program for key executive officers and associates, the compensation committee approved additional grants of performance stock units to be earned over an approximately three-year performance period ending in December 2020. Vesting of the 2018 grants of performance stock units is contingent upon the relative attainment of target gross margin, operating expense, and contracted revenue metrics.

In July 2019, the compensation committee approved additional grants of performance stock units for key executive officers. Such grants are expected to be earned over a multi-year performance period ending in December 2021. Vesting of the 2019 grants of performance stock units is contingent upon the relative attainment of target cost per watt, module wattage, gross profit, and operating income metrics.

Vesting of performance stock units is also contingent upon the employment of program participants through the applicable vesting dates, with limited exceptions in case of death, disability, a qualifying retirement, or a change-in-control of First Solar. Outstanding performance stock units are included in the computation of diluted net income per share for the years ended December 31, 2019, 2018, and 2017 based on the number of shares that would be issuable if the end of the reporting period were the end of the contingency period.

The following is a summary of our restricted stock unit activity, including performance stock unit activity, for the year ended December 31, 2019:

	Number of Shares	Weighted-Average Grant-Date Fair Value
Unvested restricted stock units at December 31, 2018	2,474,287	$ 45.63
Restricted stock units granted (1)	815,801	56.47
Restricted stock units vested	(779,320)	42.56
Restricted stock units forfeited	(99,332)	49.36
Unvested restricted stock units at December 31, 2019	2,411,436	$ 50.13

(1) Restricted stock units granted include the maximum amount of performance stock units available for issuance under our long-term incentive program for key executive officers and associates. The actual number of shares to be issued will depend on the relative attainment of the performance metrics described above.

We estimate the fair value of our restricted stock unit awards based on our stock price on the grant date. For the years ended December 31, 2018 and 2017, the weighted-average grant-date fair value for restricted stock units granted in such years was $67.44 and $32.81, respectively. The total fair value of restricted stock units vested during 2019, 2018, and 2017 was $40.8 million, $32.2 million, and $14.1 million, respectively.

Unrestricted Stock

During the years ended December 31, 2019, 2018, and 2017, we awarded 26,254; 31,190; and 42,773, respectively, of fully vested, unrestricted shares of our common stock to the independent members of our board of directors. Accordingly, we recognized $1.5 million, $1.6 million, and $1.8 million of share-based compensation expense for these awards during the years ended December 31, 2019, 2018, and 2017, respectively.

Stock Purchase Plan

Our shareholders approved our stock purchase plan for employees in June 2010. The plan allows employees to purchase our common stock through payroll withholdings over a six-month offering period at a discount from the closing share price on the last day of the offering period. In April 2017, we amended our stock purchase plan to reduce the purchase discount from 15% to 4%. Accordingly, the plan is considered noncompensatory and no longer results in the recognition of share-based compensation expense.

18. Income Taxes

In December 2017, the United States enacted the Tax Act, which significantly revised U.S. tax law by, among other things, lowering the statutory federal corporate income tax rate from 35% to 21% effective January 1, 2018, eliminating certain deductions, imposing a transition tax on certain accumulated earnings and profits of foreign corporate subsidiaries, introducing new tax regimes, and changing how foreign earnings are subject to U.S. tax. In December 2017, the SEC issued Staff Accounting Bulletin No. 118 to (i) clarify certain aspects of accounting for income taxes under ASC 740 in the reporting period the Tax Act was signed into law when information is not yet available or complete and (ii) provide a measurement period up to one year to complete the accounting for the Tax Act. We completed our accounting for the Tax Act in the fourth quarter of 2018 and recorded certain adjustments to our provisional tax expenses.

As a result of the Tax Act, we remeasured certain deferred tax assets and liabilities based on the tax rate applicable to when the temporary differences are expected to reverse in the future, which is generally 21%, and recorded a provisional tax expense of $6.6 million for the year ended December 31, 2017. During the year ended December 31, 2018, we reduced our provisional tax expense for the remeasurement of deferred tax assets and liabilities by $2.3 million. The transition tax of the Tax Act was based on our total post-1986 foreign earnings and profits, which we previously deferred from U.S. income taxes under prior tax law. During the year ended December 31, 2017, we recorded a provisional transition tax expense of $401.5 million, which we reduced by $8.1 million during the year ended December 31, 2018. We elected to pay the transition tax over an eight-year period, and our outstanding transition tax liability was $76.7 million and $81.2 million as of December 31, 2019 and 2018, respectively, after the utilization of certain tax credits and tax losses and certain installment payments. Our measurement period adjustments for the remeasurement of deferred tax assets and liabilities and the transition tax reduced our effective tax rate by 9.2% for the year ended December 31, 2018.

Although we continue to evaluate our plans for the reinvestment or repatriation of unremitted foreign earnings, we expect to indefinitely reinvest the earnings of our foreign subsidiaries to fund our international operations, with the exception of certain subsidiaries in Canada and Germany. Accordingly, we have not recorded any provision for additional U.S. or foreign withholding taxes related to the outside basis differences of our foreign subsidiaries in which we expect to indefinitely reinvest their earnings.

The U.S. and non-U.S. components of our income or loss before income taxes for the years ended December 31, 2019, 2018, and 2017 were as follows (in thousands):

	2019	2018	2017
U.S. loss	$ (239,547)	$ (49,353)	$ (22,868)
Non-U.S. income	119,418	162,500	224,983
(Loss) income before taxes and equity in earnings	$ (120,129)	$ 113,147	$ 202,115

The components of our income tax expense or benefit for the years ended December 31, 2019, 2018, and 2017 were as follows (in thousands):

	2019	2018	2017
Current expense (benefit):			
Federal	$ 9,961	$ (44,267)	$ 116,956
State	3,890	(13,568)	3,009
Foreign	41,080	8,788	11,099
Total current expense (benefit)	54,931	(49,047)	131,064
Deferred (benefit) expense:			
Federal	(55,647)	31,530	226,570
State	(6,737)	2,387	5,335
Foreign	1,973	18,571	9,027
Total deferred (benefit) expense	(60,411)	52,488	240,932
Total income tax (benefit) expense	$ (5,480)	$ 3,441	$ 371,996

Our Malaysian subsidiary has been granted a long-term tax holiday that expires in 2027. The tax holiday, which generally provides for a full exemption from Malaysian income tax, is conditional upon our continued compliance with meeting certain employment and investment thresholds, which we are currently in compliance with and expect to continue to comply with through the expiration of the tax holiday in 2027.

Our income tax results differed from the amount computed by applying the relevant U.S. statutory federal corporate income tax rate to our income or loss before income taxes for the following reasons for the years ended December 31, 2019, 2018, and 2017 (in thousands):

	2019		2018		2017	
	Tax	Percent	Tax	Percent	Tax	Percent
Statutory income tax (benefit) expense	$ (25,227)	21.0 %	$ 23,761	21.0 %	$ 70,740	35.0 %
Provisional effect of Tax Act	—	— %	—	— %	408,090	201.9 %
Changes in valuation allowance	(5,735)	4.8 %	19,064	16.8 %	9,534	4.7 %
Foreign tax rate differential	17,195	(14.3)%	14,117	12.5 %	(22,048)	(10.9)%
State tax, net of federal benefit	(4,090)	3.4 %	(7,580)	(6.7)%	4,397	2.2 %
Non-deductible expenses	11,119	(9.3)%	4,636	4.1 %	2,703	1.3 %
Share-based compensation	(1,594)	1.3 %	(2,105)	(1.9)%	1,161	0.6 %
Change in tax contingency	7,096	(5.9)%	(6,273)	(5.5)%	959	0.5 %
Foreign dividend income	6,718	(5.6)%	16,570	14.6 %	540	0.3 %
Tax credits	(1,996)	1.7 %	(8,431)	(7.5)%	(18,445)	(9.1)%
Return to provision adjustments	14,362	(12.0)%	(25,307)	(22.3)%	(35,191)	(17.4)%
Effect of tax holiday	(26,834)	22.4 %	(26,277)	(23.2)%	(46,643)	(23.1)%
Other	3,506	(2.9)%	1,266	1.1 %	(3,801)	(1.9)%
Reported income tax (benefit) expense	$ (5,480)	4.6 %	$ 3,441	3.0 %	$ 371,996	184.1 %

During the years ended December 31, 2019, 2018, and 2017, we made net tax payments of $34.7 million, $58.8 million, and $1.2 million, respectively.

In May 2017, the U.S. federal income tax authority accepted our election to classify certain of our German subsidiaries as disregarded entities of First Solar, Inc. effective January 1, 2017. Accordingly, during the year ended December 31, 2017, we recorded a benefit of $42.1 million through the tax provision to establish a deferred tax asset for excess foreign tax credits generated as a result of the associated election.

Deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities calculated under U.S. GAAP and the amounts calculated for preparing our income tax returns. The items that gave rise to our deferred taxes as of December 31, 2019 and 2018 were as follows (in thousands):

	2019	2018
Deferred tax assets:		
Net operating losses	$ 165,669	$ 108,149
Accrued expenses	134,791	55,754
Compensation	22,401	18,564
Tax credits	13,127	—
Long-term contracts	11,215	4,967
Goodwill	5,557	9,223
Inventory	4,020	4,079
Equity in earnings	2,906	2,693
Deferred expenses	2,177	2,165
Property, plant and equipment	—	18,796
Capitalized interest	—	2,948
Other	20,143	17,373
Deferred tax assets, gross	382,006	244,711
Valuation allowance	(151,705)	(159,546)
Deferred tax assets, net of valuation allowance	230,301	85,165
Deferred tax liabilities:		
Property, plant and equipment	(77,794)	—
Investment in foreign subsidiaries	(5,554)	(4,425)
Acquisition accounting / basis difference	(5,356)	(5,420)
Restricted investments and derivatives	(4,330)	(7,586)
Capitalized interest	(2,199)	—
Other	(10,790)	(3,093)
Deferred tax liabilities	(106,023)	(20,524)
Net deferred tax assets and liabilities	$ 124,278	$ 64,641

We use the deferral method of accounting for investment tax credits under which the credits are recognized as reductions in the carrying value of the related assets. The use of the deferral method also results in a basis difference from the recognition of a deferred tax asset and an immediate income tax benefit for the future tax depreciation of the related assets. Such basis differences are accounted for pursuant to the income statement method.

Changes in the valuation allowance against our deferred tax assets were as follows during the years ended December 31, 2019, 2018, and 2017 (in thousands):

	2019	2018	2017
Valuation allowance, beginning of year	$ 159,546	$ 143,818	$ 123,936
Additions	9,161	29,359	27,591
Reversals	(17,002)	(13,631)	(7,709)
Valuation allowance, end of year	$ 151,705	$ 159,546	$ 143,818

We maintained a valuation allowance of $151.7 million and $159.5 million as of December 31, 2019 and 2018, respectively, against certain of our deferred tax assets, as it is more likely than not that such amounts will not be fully realized. During the year ended December 31, 2019, the valuation allowance decreased by $7.8 million primarily due to the partial release of valuation allowances in jurisdictions with current year operating income, partially offset by an increase in valuation allowances due to current year operating losses in certain other jurisdictions.

In the normal course of business, we establish valuation allowances for our deferred tax assets when the realization of the assets is not more likely than not. We intend to maintain such valuation allowances on our deferred tax assets until there is sufficient evidence to support the reversal of all or some portion of the allowances. Given our anticipated future earnings in a foreign jurisdiction, it is reasonably possible that, within the next 12 months, sufficient positive evidence may become available to allow us to reverse the valuation allowance in such jurisdiction. However, the exact timing and amount of such reversal is subject to change depending on our future earnings in the jurisdiction and other factors.

As of December 31, 2019, we had federal and aggregate state net operating loss carryforwards of $218.3 million and $205.6 million, respectively. As of December 31, 2018, we had federal and aggregate state net operating loss carryforwards of $10.3 million and $72.9 million, respectively. If not used, the federal net operating loss carryforwards incurred prior to 2018 will begin to expire in 2030, and the state net operating loss carryforwards will begin to expire in 2029. Federal net operating losses arising in tax years beginning in 2018 may be carried forward indefinitely but may not be carried back, and the associated deduction is limited to 80% of taxable income. The utilization of our net operating loss carryforwards is also subject to an annual limitation under Section 382 of the Internal Revenue Code due to changes in ownership. Based on our analysis, we do not believe such limitation will impact our realization of the net operating loss carryforwards as we anticipate utilizing them prior to expiration.

As of December 31, 2019, we had U.S. foreign tax credit carryforwards of $11.8 million and federal and state research and development credit carryforwards of $2.9 million available to reduce future federal and state income tax liabilities. If not used, the U.S. foreign tax credits and research and development credits will begin to expire in 2029 and 2040, respectively.

A reconciliation of the beginning and ending amount of liabilities associated with uncertain tax positions for the years ended December 31, 2019, 2018, and 2017 is as follows (in thousands):

	2019	2018	2017
Unrecognized tax benefits, beginning of year	$ 72,193	$ 84,173	$ 89,256
Increases related to prior year tax positions	800	—	3,827
Decreases related to prior year tax positions	—	(2,979)	—
Decreases from lapse in statute of limitations	(1,539)	(10,704)	(11,840)
Decreases relating to settlements with authorities	—	—	(2,494)
Increases related to current tax positions	715	1,703	5,424
Unrecognized tax benefits, end of year	$ 72,169	$ 72,193	$ 84,173

If recognized, $69.8 million of unrecognized tax benefits, excluding interest and penalties, would reduce our annual effective tax rate. Due to the uncertain and complex application of tax laws and regulations, it is possible that the ultimate resolution of uncertain tax positions may result in liabilities that could be materially different from these estimates. In such an event, we will record additional tax expense or benefit in the period in which such resolution occurs. Our policy is to recognize any interest and penalties that we may incur related to our tax positions as a component of income tax expense or benefit. During the years ended December 31, 2019, 2018, and 2017, we recognized interest and penalties of $7.9 million, $5.3 million, and $5.5 million, respectively, related to unrecognized tax benefits. It is reasonably possible that $58.6 million of uncertain tax positions will be recognized within the next 12 months due to the expiration of the statute of limitations associated with such positions.

We are subject to audit by federal, state, local, and foreign tax authorities. During the year ended December 31, 2017, we settled certain examinations in Germany, which resulted in a discrete tax expense of $2.5 million. We are currently under examination in Chile, India, Malaysia, and the state of California. We believe that adequate provisions have been made for any adjustments that may result from tax examinations. However, the outcome of tax examinations cannot be predicted with certainty. If any issues addressed by our tax examinations are not resolved in a manner consistent with our expectations, we could be required to adjust our provision for income taxes in the period such resolution occurs.

The following table summarizes the tax years that are either currently under audit or remain open and subject to examination by the tax authorities in the most significant jurisdictions in which we operate:

	Tax Years
Australia	2014 - 2018
Japan	2014 - 2018
Malaysia	2014 - 2018
United States	2008 - 2009; 2015 - 2018

In certain of the jurisdictions noted above, we operate through more than one legal entity, each of which has different open years subject to examination. The table above presents the open years subject to examination for the most material of the legal entities in each jurisdiction. Additionally, tax years are not closed until the statute of limitations in each jurisdiction expires. In the jurisdictions noted above, the statute of limitations can extend beyond the open years subject to examination.

19. Net (Loss) Income per Share

The calculation of basic and diluted net (loss) income per share for the years ended December 31, 2019, 2018, and 2017 was as follows (in thousands, except per share amounts):

	2019	2018	2017
Basic net (loss) income per share			
Numerator:			
Net (loss) income	$ (114,933)	$ 144,326	$ (165,615)
Denominator:			
Weighted-average common shares outstanding	105,310	104,745	104,328
Diluted net (loss) income per share			
Denominator:			
Weighted-average common shares outstanding	105,310	104,745	104,328
Effect of restricted and performance stock units and stock purchase plan shares	—	1,368	—
Weighted-average shares used in computing diluted net (loss) income per share	105,310	106,113	104,328
Net (loss) income per share:			
Basic	$ (1.09)	$ 1.38	$ (1.59)
Diluted	$ (1.09)	$ 1.36	$ (1.59)

The following table summarizes the potential shares of common stock that were excluded from the computation of diluted net income per share for the years ended December 31, 2019, 2018, and 2017 as such shares would have had an anti-dilutive effect (in thousands):

	2019	2018	2017
Anti-dilutive shares	868	299	1,021

20. Accumulated Other Comprehensive Loss

The following table presents the changes in accumulated other comprehensive loss, net of tax, for the year ended December 31, 2019 (in thousands):

	Foreign Currency Translation Adjustment	Unrealized Gain (Loss) on Marketable Securities and Restricted Investments	Unrealized Gain (Loss) on Derivative Instruments	Total
Balance as of December 31, 2018	$ (66,380)	$ 10,641	$ 1,273	$ (54,466)
Other comprehensive (loss) income before reclassifications	(5,859)	21,905	(1,086)	14,960
Amounts reclassified from accumulated other comprehensive loss	(1,190)	(40,621)	(1,205)	(43,016)
Net tax effect	—	3,046	142	3,188
Net other comprehensive loss	(7,049)	(15,670)	(2,149)	(24,868)
Balance as of December 31, 2019	$ (73,429)	$ (5,029)	$ (876)	$ (79,334)

The following table presents the pretax amounts reclassified from accumulated other comprehensive loss into our consolidated statements of operations for the years ended December 31, 2019, 2018, and 2017 (in thousands):

Comprehensive Income Components	Income Statement Line Item	2019	2018	2017
Foreign currency translation adjustment	Cost of sales	$ 1,190	$ —	$ —
Unrealized gain on marketable securities and restricted investments	Other income, net	$ 40,621	$ 55,405	$ 49
Unrealized gain (loss) on derivative contracts:				
Foreign exchange forward contracts	Net sales	124	(1,698)	—
Foreign exchange forward contracts	Cost of sales	1,081	(212)	—
Foreign exchange forward contracts	Foreign currency income (loss), net	—	(5,448)	—
Foreign exchange forward contracts	Other income, net	—	546	(189)
		1,205	(6,812)	(189)
Total amount reclassified		$ 43,016	$ 48,593	$ (140)

21. Segment and Geographical Information

We operate our business in two segments. Our modules segment involves the design, manufacture, and sale of CdTe solar modules, which convert sunlight into electricity. Third-party customers of our modules segment include integrators and operators of PV solar power systems. Our second segment is our systems segment, through which we provide power plant solutions, which include (i) project development, (ii) EPC services, and (iii) O&M services. We may provide any combination of individual products and services within such capabilities (including, with respect to EPC services, by contracting with third parties) depending upon the customer and market opportunity. Our systems segment customers include utilities, independent power producers, commercial and industrial companies, and other system owners. As part of our systems segment, we may also temporarily own and operate certain of our systems for a period of time based on strategic opportunities or market factors.

In September 2019, we announced our transition from an internal EPC service model in the United States to an external model, in which we expect to leverage the capabilities of third-party EPC services in providing power plant solutions to our systems segment customers. This transition is not expected to affect any projects currently under construction.

The shift to an external EPC service model in the United States aligns with our typical model in international markets and is facilitated, in part, by our Series 6 module technology and its improved BoS compatibility.

Our segments are managed by our Chief Executive Officer, who is also considered our chief operating decision maker ("CODM"). Our CODM views sales of solar modules or systems as the primary drivers of our resource allocation, profitability, and cash flows. Our modules segment contributes to our operating results by providing the fundamental technologies and solar modules that drive our business and sales opportunities, and our systems segment contributes to our operating results by using such modules as part of a range of comprehensive PV solar energy solutions, depending on the customer and market opportunity. Our CODM generally makes decisions about allocating resources to our segments and assessing their performance based on gross profit. However, information about segment assets is not reported to the CODM for purposes of making such decisions. Accordingly, we exclude such asset information from our reportable segment financial disclosures.

The following tables present certain financial information for our reportable segments for the years ended December 31, 2019, 2018, and 2017 (in thousands):

	Year Ended December 31, 2019		
	Modules	Systems	Total
Net sales	$ 1,460,116	$ 1,603,001	$ 3,063,117
Gross profit	290,079	259,133	549,212
Depreciation and amortization expense	161,993	21,708	183,701
Goodwill	14,462	—	14,462

	Year Ended December 31, 2018		
	Modules	Systems	Total
Net sales	$ 502,001	$ 1,742,043	$ 2,244,044
Gross (loss) profit	(50,467)	442,644	392,177
Depreciation and amortization expense	85,797	18,647	104,444
Goodwill	14,462	—	14,462

	Year Ended December 31, 2017		
	Modules	Systems	Total
Net sales	$ 806,398	$ 2,134,926	$ 2,941,324
Gross profit	112,338	436,609	548,947
Depreciation and amortization expense	67,597	24,302	91,899

The following table presents net sales for the years ended December 31, 2019, 2018, and 2017 by geographic region, based on the customer country of invoicing (in thousands):

	2019	2018	2017
United States	$ 2,659,940	$ 1,478,034	$ 2,273,774
Australia	138,327	153,163	108,643
France	88,816	28,796	62,953
Japan	34,234	234,814	4,405
India	7,451	232,130	141,491
Turkey	426	19,354	124,433
All other foreign countries	133,923	97,753	225,625
Net sales	$ 3,063,117	$ 2,244,044	$ 2,941,324

The following table presents long-lived assets, which include property, plant and equipment, PV solar power systems, project assets (current and noncurrent), and operating lease assets as of December 31, 2019 and 2018 by geographic region, based on the physical location of the assets (in thousands):

	2019	2018
United States	$ 1,077,593	$ 659,854
Vietnam	699,841	702,071
Malaysia	637,322	532,418
Japan	416,375	319,571
Chile	234,470	240,495
All other foreign countries	75,356	108,871
Long-lived assets	$ 3,140,957	$ 2,563,280

22. Concentrations of Risks

Customer Concentration. The following customers each comprised 10% or more of our total net sales for the years ended December 31, 2019, 2018, and 2017:

	2019	2018	2017
	% of Net Sales	% of Net Sales	% of Net Sales
Customer #1	16%	*	*
Customer #2	*	16%	*
Customer #3	*	13%	47%

* Net sales for these customers were less than 10% of our total net sales for the period.

Geographic Risk. During the year ended December 31, 2019, our third-party solar module and solar power system net sales were predominantly in the United States. The concentration of our net sales in a limited number of geographic regions exposes us to local economic, public policy, and regulatory risks in such regions.

Production. Our products include components that are available from a limited number of suppliers or sources. Shortages of essential components could occur due to increases in demand or interruptions of supply, thereby adversely affecting our ability to meet customer demand for our products. Our solar modules are currently produced at our facilities in Perrysburg, Ohio; Lake Township, Ohio; Kulim, Malaysia; and Ho Chi Minh City, Vietnam. Damage to or disruption of these facilities could interrupt our business and adversely affect our ability to generate net sales.

INDEX TO EXHIBITS

The following exhibits are filed with or incorporated by reference into this Annual Report on Form 10-K:

Exhibit Number	Exhibit Description	Incorporated by Reference			
		Form	File No.	Date of First Filing	Exhibit Number
3.1	Amended and Restated Certificate of Incorporation of First Solar, Inc.	S-1/A	333-135574	10/25/06	3.1
3.2	Amended and Restated Bylaws of First Solar, Inc.	10-Q	001-33156	5/5/17	3.1
*4.1	Description of the Registrant's Securities	—	—	—	—
10.1	Form of Change in Control Severance Agreement	S-1/A	333-135574	10/25/06	10.15
10.2	Form of Director and Officer Indemnification Agreement	10-K	001-33156	2/27/13	10.20
10.3	Credit Agreement, dated as of September 4, 2009, among First Solar, Inc., First Solar Manufacturing GmbH, the lenders party thereto, JPMorgan Chase Bank, N.A., as Administrative Agent, Bank of America and The Royal Bank of Scotland plc, as Documentation Agents, and Credit Suisse, Cayman Islands Branch, as Syndication Agent	8-K	001-33156	9/10/09	10.1
10.4	Charge of Company Shares, dated as of September 4, 2009, between First Solar, Inc., as Chargor, and JPMorgan Chase Bank, N.A., as Security Agent, relating to 66% of the shares of First Solar FE Holdings Pte. Ltd. (Singapore)	8-K	001-33156	9/10/09	10.2
10.5	German Share Pledge Agreements, dated as of September 4, 2009, between First Solar, Inc., First Solar Holdings GmbH, First Solar Manufacturing GmbH, First Solar GmbH, and JPMorgan Chase Bank, N.A., as Administrative Agent	8-K	001-33156	9/10/09	10.3
10.6	Guarantee and Collateral Agreement, dated as of September 4, 2009, by First Solar, Inc. in favor of JPMorgan Chase Bank, N.A., as Administrative Agent	8-K	001-33156	9/10/09	10.4
10.7	Guarantee, dated as of September 8, 2009, between First Solar Holdings GmbH, First Solar GmbH, First Solar Manufacturing GmbH, as German Guarantors, and JPMorgan Chase Bank, N.A., as Administrative Agent	8-K	001-33156	9/10/09	10.5
10.8	Assignment Agreement, dated as of September 4, 2009, between First Solar Holdings GmbH and JPMorgan Chase Bank, N.A., as Administrative Agent	8-K	001-33156	9/10/09	10.6
10.9	Assignment Agreement, dated as of September 4, 2009, between First Solar GmbH and JPMorgan Chase Bank, N.A., as Administrative Agent	8-K	001-33156	9/10/09	10.7
10.10	Assignment Agreement, dated as of September 8, 2009, between First Solar Manufacturing GmbH and JPMorgan Chase Bank, N.A., as Administrative Agent	8-K	001-33156	9/10/09	10.8
10.11	Security Trust Agreement, dated as of September 4, 2009, between First Solar, Inc., First Solar Holdings GmbH, First Solar GmbH, First Solar Manufacturing GmbH, as Security Grantors, JPMorgan Chase Bank, N.A., as Administrative Agent, and the other Secured Parties party thereto	8-K	001-33156	9/10/09	10.9
10.12	Amended and Restated Credit Agreement, dated as of October 15, 2010, among First Solar, Inc., the borrowing subsidiaries party thereto, the lenders party thereto, Bank of America N.A. and The Royal Bank of Scotland PLC, as documentation agents, Credit Suisse, Cayman Islands Branch, as syndication agent and JPMorgan Chase Bank, N.A., as administrative agent	8-K	001-33156	10/20/10	10.1
10.13	First Solar, Inc. 2010 Omnibus Incentive Compensation Plan	DEF 14A	001-33156	4/20/10	App. A
10.14	First Solar, Inc. Stock Purchase Plan	DEF 14A	001-33156	4/20/10	App. B

Exhibit Number	Exhibit Description	Incorporated by Reference			
		Form	File No.	Date of First Filing	Exhibit Number
10.15	Employment Agreement, dated March 15, 2011, and Change in Control Severance Agreement, dated April 4, 2011 between First Solar, Inc. and Mark Widmar	10-Q	001-33156	5/5/11	10.3
10.16	First Amendment, dated as of May 6, 2011, to the Amended and Restated Credit Agreement, dated as of October 15, 2010, among First Solar, Inc., the borrowing subsidiaries party thereto, the lenders party thereto, Bank of America, N.A. and The Royal Bank of Scotland plc, as documentation agents, Credit Suisse, Cayman Islands Branch, as syndication agent, and JPMorgan Chase Bank, N.A., as administrative agent	8-K	001-33156	5/12/11	10.1
10.17	Second Amendment and Waiver, dated as of June 30, 2011, to the Amended and Restated Credit Agreement, dated as of October 15, 2010, among First Solar, Inc., the lenders party thereto, Bank of America, N.A. and The Royal Bank of Scotland plc, as documentation agents, Credit Suisse, Cayman Islands Branch, as syndication agent, and JPMorgan Chase Bank, N.A., as administrative agent	8-K	001-33156	7/14/11	10.1
10.18	Employment Agreement, effective July 1, 2012, and Change in Control Severance Agreement, effective July 1, 2012 between First Solar, Inc. and Georges Antoun	10-Q	001-33156	8/3/12	10.1
10.19	Third Amendment, dated as of October 23, 2012 to the Amended and Restated Credit Agreement dated as of October 15, 2010, among First Solar, Inc., the lenders party thereto, Bank of America, N.A. and The Royal Bank of Scotland plc, as documentation agents, Credit Suisse, Cayman Islands Branch, as syndication agent, and JPMorgan Chase Bank, N.A., as administrative agent	8-K	001-33156	10/26/12	10.1
10.20	Non-Competition and Non-Solicitation Agreement, effective as of March 15, 2011, between First Solar, Inc. and Mark Widmar	10-Q	001-33156	5/7/13	10.2
10.21	Change in Control Severance Agreement, effective as of July 1, 2012, between First Solar, Inc. and Georges Antoun	10-Q	001-33156	5/7/13	10.3
10.22	Fourth Amendment dated as of July 15, 2013, to the Amended and Restated Credit Agreement, dated as of October 15, 2010, among First Solar, Inc., the lenders party thereto and JPMorgan Chase Bank, N.A., as administrative agent	8-K	001-33156	7/19/13	10.1
10.23	Amended and Restated Guarantee and Collateral Agreement, dated as of July 15, 2013, by First Solar, Inc., First Solar Electric, LLC, First Solar Electric (California), Inc. and First Solar Development, LLC in favor of JPMorgan Chase Bank, N.A., as administrative agent	8-K	001-33156	7/19/13	10.2
10.24	Amendment to Change in Control Severance Agreement	10-Q	001-33156	8/7/13	10.1
10.25	Employment Agreement, effective March 3, 2014, and Change in Control Severance Agreement, effective March 3, 2014 between First Solar, Inc. and Paul Kaleta	10-K	001-33156	2/26/14	10.1
10.26	Restricted Cash Assignment of Deposits	10-Q	001-33156	8/6/14	10.2
10.27	First Solar, Inc. 2015 Omnibus Incentive Compensation Plan	DEF 14A	001-33156	4/8/15	App. A
10.28	Fifth Amendment, dated as of June 3, 2015, to the Amended and Restated Credit Agreement, dated as of October 15, 2010, among First Solar, Inc., the lenders party thereto and JPMorgan Chase Bank, N.A., as administrative agent	8-K	001-33156	6/5/15	10.1
10.29	Employment Agreement, effective as of July 25, 2011, and Change in Control Severance Agreement, effective as of October 25, 2011 and amended as of August 1, 2013, between First Solar, Inc. and Philip Tymen deJong	10-K	001-33156	2/24/16	10.23
10.30	Employment Agreement, effective as of May 1, 2012, and Change in Control Severance Agreement, effective as of May 1, 2012 and amended as of August 1, 2013, between First Solar, Inc. and Raffi Garabedian	10-K	001-33156	2/24/16	10.24

Exhibit Number	Exhibit Description	Incorporated by Reference			
		Form	File No.	Date of First Filing	Exhibit Number
10.31	Employment Agreement, effective as of February 17, 2016, and Change in Control Severance Agreement, effective as of February 17, 2016 between First Solar, Inc. and Chris Bueter	10-K	001-33156	2/24/16	10.26
10.32	Amendment to Employment Agreement, effective as of July 1, 2016, between First Solar, Inc. and Mark Widmar, and Amendment to Non-Competition and Non-Solicitation Agreement, effective as of July 1, 2016, between First Solar, Inc. and Mark Widmar, and Second Amendment to Change-in-Control Severance Agreement, effective as of July 1, 2016, between First Solar, Inc. and Mark Widmar	10-Q	001-33156	4/28/16	10.1
10.33	Employment Agreement, effective as of October 24, 2016, and Change-in-Control Severance Agreement, effective as of October 24, 2016, between First Solar, Inc. and Alexander Bradley	10-Q	001-33156	11/3/16	10.1
*10.34	Employment Agreement, Change In Control Severance Agreement, Confidentiality and Intellectual Property Agreement, and Non-Competition and Non-Solicitation Agreement, effective as of October 7, 2019 between First Solar, Inc. and Caroline Stockdale	—	—	—	—
10.35	Sixth Amendment, dated as of January 20, 2017, to the Amended and Restated Credit Agreement, dated as of October 15, 2010, among First Solar, Inc., the lenders party thereto and JPMorgan Chase Bank, N.A., as administrative agent	8-K	001-33156	1/27/17	10.1
10.36	Form of Performance Unit Award Agreement - Form Perf Unit-006	10-K	001-33156	2/22/17	10.33
10.37	Form of Grant Notice for Executive Performance Equity Plan	10-Q	001-33156	5/5/17	10.1
10.38	Second Amended and Restated Credit Agreement, dated as of July 10, 2017, among First Solar, Inc., the borrowing subsidiaries party thereto, the lenders party thereto, and JPMorgan Chase Bank, N.A., as administrative agent	8-K	001-33156	7/14/17	10.1
10.39	Form of Grant Notice for Executive Performance Equity Plan	10-Q	001-33156	7/27/18	10.1
10.40	Form of Grant Notice for CEO Leadership Equity Plan	10-Q	001-33156	7/27/18	10.2
10.41	Form of Performance Unit Award Agreement - Form Perf Unit-008	10-Q	001-33156	7/27/18	10.3
10.42	Form of Performance Unit Award Agreement - Form Perf Unit-009	10-K	001-33156	2/22/19	10.45
*10.43	Form of RSU Award Agreement	—	—	—	—
*10.44	Form of Option Award Agreement	—	—	—	—
*10.45	Form of Share Award Agreement	—	—	—	—
*10.46	Form of Performance Unit Award Agreement - Form Perf Unit-010	—	—	—	—
*10.47	Form of Cash Incentive Award Agreement	—	—	—	—
10.48	Form of Grant Notice for 2019-2021 Executive Performance Equity Plan	10-Q	001-33156	10/24/19	10.1
*21.1	List of Subsidiaries of First Solar, Inc.	—	—	—	—
*23.1	Consent of Independent Registered Public Accounting Firm	—	—	—	—
*31.01	Certification of Chief Executive Officer pursuant to Rule 13a-14(a) and 15d-14(a), as amended	—	—	—	—
*31.02	Certification of Chief Financial Officer pursuant to Rule 13a-14(a) and 15d-14(a), as amended	—	—	—	—
†*32.01	Certification of Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002	—	—	—	—
*101.INS	XBRL Instance Document – the instance document does not appear in the Interactive Data file because its XBRL tags are embedded within the Inline XBRL document	—	—	—	—
*101.SCH	XBRL Taxonomy Extension Schema Document	—	—	—	—
*101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document	—	—	—	—

Exhibit Number	Exhibit Description	Incorporated by Reference			
		Form	File No.	Date of First Filing	Exhibit Number
*101.DEF	XBRL Taxonomy Extension Definition Linkbase Document	—	—	—	—
*101.LAB	XBRL Taxonomy Label Linkbase Document	—	—	—	—
*101.PRE	XBRL Taxonomy Extension Presentation Document	—	—	—	—
*104	Cover page formatted as Inline XBRL and contained in Exhibit 101	—	—	—	—

* Filed herewith.

† This exhibit shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934 or otherwise subject to the liabilities of that section, nor shall it be deemed incorporated by reference in any filing under the Securities Act of 1933 or the Securities Exchange Act of 1934, whether made before or after the date hereof and irrespective of any general incorporation language in any filings.

Item 16. ***Form 10-K Summary***

None.

SIGNATURES

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

FIRST SOLAR, INC.

February 20, 2020	By:	/s/ BYRON JEFFERS
	Name:	Byron Jeffers
	Title:	Chief Accounting Officer

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

Signature	Title	Date
/s/ MARK R. WIDMAR Mark R. Widmar	Chief Executive Officer and Director	February 20, 2020
/s/ ALEXANDER R. BRADLEY Alexander R. Bradley	Chief Financial Officer	February 20, 2020
/s/ MICHAEL J. AHEARN Michael J. Ahearn	Chairman of the Board of Directors	February 20, 2020
/s/ SHARON L. ALLEN Sharon L. Allen	Director	February 20, 2020
/s/ RICHARD D. CHAPMAN Richard D. Chapman	Director	February 20, 2020
/s/ GEORGE A. HAMBRO George A. Hambro	Director	February 20, 2020
/s/ MOLLY E. JOSEPH Molly Joseph	Director	February 20, 2020
/s/ CRAIG KENNEDY Craig Kennedy	Director	February 20, 2020
/s/ WILLIAM J. POST William J. Post	Director	February 20, 2020
/s/ PAUL H. STEBBINS Paul H. Stebbins	Director	February 20, 2020
/s/ MICHAEL SWEENEY Michael Sweeney	Director	February 20, 2020

EXHIBIT 4.1

DESCRIPTION OF THE REGISTRANT'S SECURITIES
REGISTERED PURSUANT TO SECTION 12 OF THE SECURITIES
EXCHANGE ACT OF 1934

First Solar, Inc. has one class of securities registered under Section 12 of the Securities Exchange Act of 1934, as amended: our common stock.

In this Exhibit 4.1, when we refer to "First Solar," the "Company," "we," "us," or "our" or when we otherwise refer to ourselves, we mean First Solar, Inc., excluding, unless otherwise expressly stated or the context requires, our subsidiaries; all references to "common stock" refer only to common stock issued by us and not to any common stock issued by any subsidiary.

The general terms and provisions of our common stock and certain provisions of the General Corporation Law of the State of Delaware (the "DGCL") are summarized below. This summary does not purport to be complete and is subject to, and is qualified in its entirety by express reference to, our amended and restated certificate of incorporation (the "certificate of incorporation"), our amended and restated bylaws (the "bylaws" and, together with the certificate of incorporation, the "organizational documents"), and the DGCL. Our certificate of incorporation and bylaws are filed as exhibits to the Annual Report on Form 10-K of which this Exhibit 4.1 is a part. We encourage you to read our certificate of incorporation, our bylaws, and the applicable provisions of the DGCL for additional information.

Authorized Shares
Our authorized capital stock consists of 500,000,000 shares of common stock, par value $0.001 per share, and 30,000,000 shares of preferred stock, par value $0.001 per share.

Dividends
The holders of our common stock are entitled to dividends as our board of directors may declare from time to time at its absolute discretion from funds legally available therefor.

Voting Rights
The holders of our common stock are entitled to one vote for each share held of record on any matter to be voted upon by stockholders. Our certificate of incorporation does not provide for cumulative voting in connection with the election of directors.

Liquidation Rights
Upon any voluntary or involuntary liquidation, dissolution, or winding up of our affairs, the holders of our common stock are entitled to share ratably in all assets remaining after payment to creditors and subject to prior distribution rights of any outstanding shares of preferred stock. All the outstanding shares of common stock are fully paid and non-assessable.

Absence of Other Rights
There are no preemptive, conversion, redemption, or sinking fund provisions applicable to our common stock.

Certain Anti-takeover Effects

Certain provisions of the DGCL, our certificate of incorporation, and our bylaws could make it more difficult to acquire us by means of a tender offer, a proxy contest or otherwise, or to remove incumbent officers and directors. These provisions, summarized below, are expected to discourage types of coercive takeover practices and inadequate takeover bids and to encourage persons seeking to acquire control of us to first negotiate with us. We believe that the benefits of increased protection of our potential ability to negotiate with the proponent of an unfriendly or unsolicited proposal to acquire or restructure us outweigh the disadvantages of discouraging takeover or acquisition proposals because, among other things, negotiation of these proposals could result in an improvement of their terms.

Special Meeting of Stockholders. Our board of directors may call a special meeting of stockholders at any time, but no stockholder or other person may call any such special meeting.

No Written Consent of Stockholders. Any action taken by our stockholders must be effected at a duly held meeting of stockholders and may not be effected by the written consent of such stockholders.

Advance Notice Requirements. Our bylaws require stockholders seeking to nominate persons for election as directors at an annual meeting or a special meeting of stockholders, or to bring other business before such annual meeting or special meeting, to provide timely notice, in proper form, to our corporate secretary.

No Cumulative Voting. The DGCL provides that stockholders are denied the right to cumulate votes in the election of directors unless our certificate of incorporation provides otherwise. Our certificate of incorporation does not provide for cumulative voting.

Board Vacancies. Vacancies and newly created directorships resulting from any increase in the authorized number of directors may be filled by a majority of the directors then in office, though less than a quorum, or by a sole remaining director, and the directors so chosen shall hold office until their earlier resignation or removal.

Limitations on Liability and Indemnification of Officers and Directors. The DGCL authorizes corporations to limit or eliminate the personal liability of directors to corporations and their stockholders for monetary damages for breaches of directors' fiduciary duties as directors. Our organizational documents include provisions that indemnify, to the fullest extent allowable under the DGCL, the personal liability of directors or officers for monetary damages for actions taken as a director or officer of our company, or for serving at our request as a director or officer or another position at another corporation or enterprise, as the case may be. Our organizational documents also provide that we must indemnify and advance reasonable expenses to our directors and officers, subject to our receipt of an undertaking from the indemnitee as may be required under the DGCL. We are also expressly authorized to carry directors' and officers' insurance to protect our company, our directors, officers and certain associates for some liabilities. In addition, we have entered into an agreement with each of our directors and officers whereby we have agreed to indemnify them substantially in accordance with the indemnification provisions applicable to our officers and directors in our bylaws.

The limitation of liability and indemnification provisions in our certificate of incorporation and our bylaws may discourage stockholders from bringing a lawsuit against directors for breach of their fiduciary duty. These provisions may also have the effect of reducing the likelihood of derivative litigation against directors and officers, even though such an action, if successful, might otherwise benefit us and our stockholders. In addition, your investment may be adversely affected to the extent that, in a class action or direct suit, we pay the costs of settlement and damage awards against directors and officers pursuant to these indemnification provisions.

Authorized but Unissued Shares of Common Stock. Subject to Nasdaq Stock Market Rule 5635(d), our authorized but unissued shares of common stock will be available for future issuance without your approval. We may use additional shares for a variety of corporate purposes, including future public offerings to raise additional capital, corporate acquisitions and employee benefit plans and as consideration for future acquisitions, investments, or other purposes. The existence of authorized but unissued shares of common stock could render more difficult or discourage an attempt to obtain control of us by means of a proxy contest, tender offer, merger, or otherwise.

Undesignated Preferred Stock. Our certificate of incorporation and bylaws authorize undesignated preferred stock. As a result, our board of directors may, without stockholder approval, issue preferred stock with super voting, special approval, dividend, or other rights or preferences on a discriminatory basis that could impede the success of any attempt to acquire us. These and other provisions may have the effect of deferring, delaying, or discouraging hostile takeovers, or changes in control or management of the Company.

Amendments to Organizational Documents. The DGCL provides generally that the affirmative vote of a majority of the shares entitled to vote on any matter is required to amend a corporation's certificate of incorporation and to adopt, amend, or repeal its bylaws, except in the case of a corporation's bylaws to the extent such power to adopt, amend, or repeal is vested in the board of directors. Our certificate of incorporation authorizes our board of directors to adopt, amend, or repeal our bylaws then in effect by the vote of a majority of the directors present at any meeting of the board of directors at which there is a quorum.

Delaware Anti-Takeover Statute. We have elected not to be subject to Section 203 of the DGCL, an anti-takeover statute. In general, Section 203 prohibits a publicly held Delaware corporation from engaging in a "business combination" with an "interested stockholder" for a period of three years following the time the person became an interested stockholder, unless (with certain exceptions) the business combination or the transaction in which the person became an interested stockholder is approved in a prescribed manner. Generally, a "business combination" includes a merger, asset or stock sale, or other transaction resulting in a financial benefit to the interested stockholder. Generally, an "interested stockholder" is a person who, together with affiliates and associates, owns (or within three years prior to the determination of interested stockholder status did own) 15 percent or more of a corporation's voting stock. If we were subject to this statute, this provision would be expected to have an anti-takeover effect with respect to transactions not approved in advance by our board of directors, including discouraging attempts that might result in a premium over the market price for the shares of common stock held by stockholders.

Transfer Agent and Registrar
The transfer agent and registrar for our common stock is Computershare Trust Company, N.A.

Listing
Our common stock is listed on The Nasdaq Stock Market LLC under the symbol FSLR.

EXHIBIT 10.34

EMPLOYMENT AGREEMENT

This Employment Agreement (this "Agreement") is made by and between First Solar, Inc., a Delaware corporation having its principal office at 350 West Washington Street, Suite 600, Tempe, Arizona 85281 (hereinafter, "Employer") and **Caroline Stockdale** (hereinafter, "Employee"), and is effective as of **October 7, 2019** (the "Effective Date") subject to Section 1.1(b) below.

WITNESSETH:

WHEREAS, Employer and Employee wish to enter into this Agreement relating to the employment of Employee by Employer.

NOW, THEREFORE, in consideration of the foregoing premises, and the mutual covenants, terms and conditions set forth herein, and intending to be legally bound hereby, Employer and Employee hereby agree as follows:

ARTICLE I. Employment

1.1 Employment Term; Condition Precedent; At-Will Nature of Employment.

(a) Employment Term. The term of this Agreement (the "Employment Term") shall commence as of the Effective Date and shall end on the date Employee's employment with Employer terminates for any reason.

(b) Condition Precedent. The effectiveness of this Agreement shall be subject to Employer obtaining a resolution from the Board of Directors of Employer ("Board") appointing Employee to the position of **Executive Vice President, Human Resources**.

(c) At Will Nature of Employment. As of the Effective Date, Employer shall employ Employee as a full-time, at-will employee, and Employee shall accept employment with Employer as a full-time, at-will employee. Employer or Employee may terminate this Agreement at any time and for any reason, with or without cause and with or without notice, subject to the provisions of this Agreement.

1.2 Position and Duties of Employee. Employer hereby employs Employee in the initial capacity of **Executive Vice President, Human Resources** for Employer and Employee hereby accepts such position. In this position, Employee shall report to Employer's **Chief Executive Officer** (the "Supervisor"). Employee agrees to diligently and faithfully perform such duties as may from time to time be assigned to Employee by the Supervisor, consistent with Employee's position with Employer. Employee recognizes the necessity for established policies, practices and procedures pertaining to Employer's business operations, and Employer's right to change, revoke or supplement such policies, practices and procedures at any time, in Employer's sole discretion. Employee agrees to comply with such policies, practices and procedures, including those contained in any manuals or handbooks, as may be amended from time to time in the sole discretion of Employer. Employee shall be based in Tempe, AZ but shall be required to travel to such locations as shall be required to fulfill the responsibilities of his/her position.

1.3 No Salary or Benefits Continuation Beyond Termination. Except as may be required by applicable law or as otherwise specified in this Agreement or the Change in Control Severance Agreement between Employer and Employee dated as of the date hereof, as may be amended from time to time (the "Change in Control Agreement"), Employer shall not be liable to Employee for any salary or benefits continuation beyond the date of Employee's cessation of employment with Employer.

1.4 Termination of Employment. Employee's employment with Employer shall terminate upon the earliest of: (a) Employee's death; (b) unless waived by Employer, Employee's "Disability" (which for purposes of this Agreement, shall mean either a physical or mental condition (as determined by a qualified physician mutually agreeable to Employer and Employee) which renders Employee unable, for a period of at least six (6) months, effectively to perform the obligations, duties and responsibilities of Employee's employment with Employer); (c) the termination of Employee's employment by Employer for Cause (as hereinafter defined); (d) the termination of Employee's employment by Employer without Cause and (e) the termination of Employee's employment by Employee for any reason. As used herein, termination shall be for "Cause" if Employee (i) willfully breaches significant and material duties he/she is required to perform; (ii) commits misconduct damaging to the Employer or its affiliates or subsidiaries, its reputation, products, services, or customers; (iii) commits a material act of fraud, embezzlement, theft, dishonesty, misrepresentation or other act of moral turpitude; (iv) violates any law or regulation; (v) commits unauthorized disclosure of any trade secret or confidential information of the Employer or its affiliates or subsidiaries or breaches the Non-Competition and Non- Solicitation Agreement between Employer and Employee dated as of the date hereof, as may be amended from time to time (the "Non-Competition Agreement"), the Confidentiality and Intellectual Property Agreement between Employer and Employee dated as of the date hereof, as may be amended from time to time (the "Confidentiality Agreement") or the Change in Control Agreement; (vi) fails to perform under this Agreement or fails to perform other duties owed to the Employer or its affiliates or subsidiaries; (vii) is convicted of a felony or another crime which is materially injurious to the reputation of the Employer or its affiliates or subsidiaries; (viii) is charged with a felony or a misdemeanor involving moral turpitude; (ix) exhibits gross negligence in the course of his/her employment; (x) is ordered removed by a regulatory or other governmental agency pursuant to applicable law; or (xi) willfully fails to obey a material lawful direction from the Board. Upon termination of Employee's employment with Employer for any reason, Employee will promptly return to Employer all materials in any form acquired by Employee as a result of such employment with Employer, and all property of Employer.

ARTICLE II. Compensation and Benefits

2.1 Base Salary. Employee shall be compensated at an annual base salary of **$430,000** (the "Base Salary") while Employee is employed by Employer under this Agreement, subject to such periodic modifications that Employer may, in its sole discretion, determine to be appropriate. Such Base Salary shall be paid in accordance with Employer's standard policies and shall be subject to applicable tax withholding requirements.

2.2 Annual Bonus Eligibility. Employee shall be eligible to participate in Employer's annual bonus program under which Employee's target bonus shall equal **eighty percent (80%)** of Employee's Base Salary with a maximum bonus of up to two hundred percent (200%) of Employee's target bonus. Bonus payment in respect of the first year of employment shall be pro- rated based on the number of days employed during such year. Payment of any bonus shall be based upon individual and company performance, as determined by Employer's Chief Executive Officer and/or the compensation committee of the Board (the "Compensation Committee"), as well as any applicable terms of the annual bonus program. The terms of the annual bonus program shall be developed by Employer and communicated to Employee as soon as practicable after the beginning of each year.

2.3 Benefits; Vacation. Employee shall be eligible to receive all benefits as are available to similarly situated employees of Employer generally, and any other benefits that Employer may, in its sole discretion, elect to grant to Employee from time to time. In addition, Employee shall be entitled to **four (4)** weeks paid vacation per year, which shall be pro-rated for the first partial year of employment and shall accrue in accordance with Employer's policies applicable to similarly situated employees of Employer.

2.4 Reimbursement of Business Expenses. Employee may incur reasonable expenses in the course of employment hereunder for which Employee shall be eligible for reimbursement or advances in accordance with Employer's standard policy therefor.

2.5 Equity Grants. Subject to approval by the Compensation Committee, Employee shall be eligible for future equity grants and other long-term incentives.

ARTICLE III. Impact of Termination of Employment on Certain Compensation Elements

3.1 Vacation Pay in the Event of a Termination of Employment. In the event of the termination of Employee's employment with Employer for any reason, Employee shall be entitled to receive, in addition to the Severance Payments described in Section 3.2(a) below, if any, the dollar value of any earned but unused (and unforfeited) vacation. Such dollar value shall be paid
to Employee within fifteen (15) days following the date of termination of employment (or such earlier time as may be required by law).

3.2 Treatment in the Event of a Termination Without Cause.

(a) Severance Payments. If Employee's employment is terminated by Employer without Cause (other than due to death or due to Disability), then, subject to (A) the Change in Control Agreement (which shall apply in lieu of this Agreement in the event employment is terminated without Cause following a Change in Control (as defined in the Change in Control Agreement)), and (B) Employee's satisfaction of the Release Condition described in Section 3.2(b) below, Employee shall be entitled to continuation of Employee's Base Salary (as defined in Section 2.1) (such salary continuation, along with the equity acceleration described in Section 3.2(d) below, the "Severance Payments") for a period of 12 months (which period shall commence on the thirty-sixth (36th) day following the date employment terminates) in accordance with Employer's regular payroll practices and procedures.

(b) Release Condition. Notwithstanding anything to the contrary herein, unless (A) Employee shall have executed and delivered a general release in favor of Employer and its affiliates (which release shall: (1) be submitted to Employee for his/her review by the date of Employee's termination of employment (or shortly thereafter), (2) be in substantially in the form of the Separation Agreement and Release attached hereto as **Exhibit A** and (3) otherwise be satisfactory to Employer) and (B) the Release Effective Date shall have occurred on or before the thirty-sixth (36th) day following the date Employee's employment terminates, (x) no Severance Payments shall be due or made to Employee hereunder, (y) Employer shall be relieved of all obligations to provide or make available any further benefits to the Employee pursuant to Section 3.2(c) and (z) Employee shall be required to repay Employer, in cash, within five business days after written demand is made therefor by Employer, an amount equal to the value of any benefits received by Employee pursuant to Section 3.2(c). The "Release Effective Date" shall be the date the general release becomes effective and irrevocable.

(c) Medical Insurance. If Employee's employment is terminated by Employer without Cause (other than due to death or due to Disability), subject to the Change in Control Agreement (which shall apply in lieu of this Agreement in the event employment is terminated without Cause following a Change in Control) and Employee's satisfaction of the Release Condition described in Section 3.2(b) above, then Employer will provide or pay the cost of continuing the medical coverage provided by Employer to Employee and his/her dependents during Employee's employment at the same or a comparable coverage level, for a period beginning on the date of termination and ending on the earlier of (i) the date that is twelve (12) months following such termination and (ii) the date that Employee is covered under a medical benefits plan of a subsequent employer. Employee agrees to make a timely COBRA election, to the extent requested by Employer, to facilitate Employer's provision of continuation coverage. Except as permitted by Section 409A (as defined below), the continued benefits provided to Employee pursuant to this Section 3.2(c) during any calendar year will not affect the continued benefits to be provided to Employee pursuant to this Section 3.2(c) in any other calendar year, and the right to such benefits cannot be liquidated or exchanged for any other benefit and shall be provided in accordance with Treas. Reg. Sec. 1.409A-3(i)(1)(iv) or any successor thereto. In the case of

any reimbursement payments, such payments shall be made to the Employee on or before the last day of the calendar year following the calendar year in which the underlying fee, cost or expense is incurred. Notwithstanding anything to the contrary herein, to the extent necessary to satisfy Section 105(h) of the Internal Revenue Code of 1986, as amended (the "Code") and Section 2716 of the Public Health Service Act, including the nondiscrimination rules applicable to non-grandfathered plans under the Patient Protection and Affordable Care Act of 2010, as amended, and the related regulations and guidance promulgated thereunder, the Employer will be permitted to alter the manner in which benefits under this Section 3.2(c) are provided to Employee.

(d) Equity Award Vesting. In the event of (A) the termination of Employee's employment with Employer due to Employee's death, (B) the termination of Employee's employment with Employer due to Disability, or (C) the termination of Employee's employment by Employer without Cause, then, subject to the Change in Control Agreement (which shall apply in lieu of this Agreement in the event employment is terminated without Cause following a Change in Control) and Employee's satisfaction of the Release Condition described in Section 3.2(b) above, Employee shall on the date of such termination of employment immediately receive an additional twelve (12) months' vesting credit with respect to the stock options, stock appreciation rights, restricted stock and other equity or equity-based compensation of Employer granted to Employee in the course of his/her employment with Employer (other than any performance units granted after the Effective Date under an executive performance equity plan that by its explicit terms in not subject to this Section 3.2(d), for which any acceleration will be solely as provided in the award agreement evidencing such units). The shares of Employer underlying any restricted stock units that become vested pursuant to this Section 3.2(d) shall be payable on the vesting date. Any of Employee's stock options and stock appreciation rights that become vested pursuant to this Section 3.2(d) shall be exercisable immediately upon vesting. Employee will have one (1) year and ninety (90) days after termination of employment without Cause, death or Disability to exercise any such vested stock options or other equity compensation; provided that, if during such period Employee is under any trading restriction due to a lockup agreement or closed trading window, then such period shall be tolled during the period of such trading restriction; provided further that in no event shall any stock option or stock appreciation right continue to be exercisable after the original expiration date of such stock option or stock appreciation right. Notwithstanding anything in this Agreement or the Change in Control Agreement to the contrary, in the case of the termination of Employee's employment with Employer due to Employee's death or due to Disability following a Change in Control, this Section 3.2(d) shall continue to apply.

3.3 Clawback. All payments made to the Employee pursuant to this Agreement shall be subject to clawback by Employer to the extent required by applicable law or the policies of the Employer as in effect from time to time.

ARTICLE IV. Absence of Restrictions

4.1 Employee hereby represents and warrants to Employer that Employee has full power, authority and legal right to enter into this Agreement and to carry out all obligations and duties hereunder and that the execution, delivery and performance by Employee of this Agreement will not violate or conflict with, or constitute a default under, any agreements or other understandings to which Employee is a party or by which Employee may be bound or affected, including any order, judgment or decree of any court or governmental agency. Employee further represents and warrants to Employer that Employee is free to accept employment with Employer as contemplated herein and that Employee has no prior or other obligations or commitments of any kind to any person, firm, partnership, association, corporation, entity or business organization that would in any way hinder or interfere with Employee's acceptance of, or the full performance of, Employee's duties hereunder.

ARTICLE V. Miscellaneous

5.1 Withholding. Any payments made under this Agreement shall be subject to applicable federal, state and local tax reporting and withholding requirements.

5.2 Governing Law. This Agreement shall be governed by and construed and enforced in accordance with the laws of the State of Arizona without reference to the principles of conflicts of laws. Any judicial action commenced relating in any way to this Agreement including the enforcement, interpretation or performance of this Agreement, shall be commenced and maintained in a court of competent jurisdiction located in Phoenix, Arizona. In any action to enforce this Agreement, the prevailing party shall be entitled to recover its litigation costs, including its attorneys' fees. The parties hereby waive and relinquish any right to a jury trial and agree that any dispute shall be heard and resolved by a court and without a jury. The parties further agree that the dispute resolution, including any discovery, shall be accelerated and expedited to the extent possible. Each party's agreements in this Section 5.2 are made in consideration of the other party's agreements in this Section 5.2, as well as in other portions of this Agreement.

5.3 No Waiver. The failure of Employer or Employee to insist in any one or more instances upon performance of any terms, covenants and conditions of this Agreement shall not be construed as a waiver or relinquishment of any rights granted hereunder or of the future performance of any such terms, covenants or conditions.

5.4 Notices. All notices, requests, demands and other communications hereunder shall be in writing and shall be deemed to have been duly given if personally delivered, delivered by facsimile transmission or by courier or mailed, registered or certified mail, postage prepaid as follows:

If to Employer: First Solar, Inc.
350 West Washington Street
Suite 600
Tempe, Arizona 85281
Attention: Corporate Secretary

If to Employee: To Employee's then current address on file with Employer

Or at such other address or addresses as any such party may have furnished to the other party in writing in a manner provided in this Section 5.4.

5.5 Assignability and Binding Effect. This Agreement is for personal services and is therefore not assignable by Employee. This Agreement may be assigned by Employer to any successor (whether direct or indirect, by purchase, merger, consolidation or otherwise) to all or substantially all of the business or assets of Employer. This Agreement shall be binding upon and inure to the benefit of the parties, their successors, assigns, heirs, executors and legal representatives. If there shall be a successor to Employer or Employer shall assign this Agreement, then as used in this Agreement, (a) the term "Employer" shall mean Employer as hereinbefore defined and any successor or any permitted assignee, as applicable, to which this Agreement is assigned and (b) the term "Board" shall mean the Board as hereinbefore defined and the board of directors or equivalent governing body of any successor or any permitted assignee, as applicable, to which this Agreement is assigned.

5.6 Entire Agreement. This Agreement, the Change in Control Agreement, the Non- Competition Agreement and the Confidentiality Agreement set forth the entire agreement between Employer and Employee regarding the terms of Employee's employment and supersede all prior agreements between Employer and Employee covering the terms of Employee's employment. This Agreement may not be amended or modified except in a written instrument signed by Employer and Employee identifying this Agreement and stating the intention to amend or modify it.

5.7 Severability. If it is determined by a court of competent jurisdiction that any of the restrictions or language in this Agreement are for any reason invalid or unenforceable, the parties desire and agree that the court revise any such restrictions or language, including reducing any time or geographic area, so as to render them valid and enforceable to the fullest extent allowed by law. If any restriction or language in this Agreement is for any reason invalid or unenforceable and cannot by law be revised so as to render it valid and enforceable, then the parties desire and agree that the court strike only the invalid and unenforceable language and enforce the balance of this Agreement to the fullest extent allowed by law. Employer and Employee agree that the invalidity or unenforceability of any provision

of this Agreement shall not affect the remainder of this Agreement.

5.8 Construction. As used in this Agreement, words such as "herein," "hereinafter," "hereby" and "hereunder," and the words of like import refer to this Agreement, unless the context requires otherwise. The words "include," "includes" and "including" shall be deemed to be followed by the phrase "without limitation".

5.9 Survival. The rights and obligations of the parties under the provisions of this Agreement, including Article III, this Article V and Article VI, shall survive and remain binding and enforceable, notwithstanding the termination of Employee's employment for any reason, to the extent necessary to preserve the intended benefits of such provisions.

ARTICLE VI. Section 409A

6.1 In General. It is intended that the provisions of this Agreement comply with Section 409A of the Code, as amended, and the regulations thereunder as in effect from time to time (collectively, "Section 409A"), and all provisions of this Agreement shall be construed and interpreted in a manner consistent with the requirements for avoiding taxes or penalties under Section 409A. In addition, references in this Agreement to a termination of employment shall mean a termination that constitutes a separation of service within the meaning of Section 409A.

6.2 No Alienation, Set-offs, Etc. Neither Employee nor any creditor or beneficiary of Employee shall have the right to subject any deferred compensation (within the meaning of Section 409A) payable under this Agreement or under any other plan, policy, arrangement or agreement of or with Employer or any of its affiliates (this Agreement and such other plans, policies, arrangements and agreements, the "Employer Plans") to any anticipation, alienation, sale, transfer, assignment, pledge, encumbrance, attachment or garnishment. Except as permitted under Section 409A, any deferred compensation (within the meaning of Section 409A) payable to or for the benefit of Employee under any Employer Plan may not be reduced by, or offset against, any amount owing by Employee to Employer or any of its affiliates.

6.3 Possible Six-Month Delay. If, at the time of Employee's separation from service (within the meaning of Section 409A), (a) Employee shall be a specified employee (within the meaning of Section 409A and using the identification methodology selected by Employer from time to time) and (b) Employer shall make a good faith determination that an amount payable under an Employer Plan constitutes deferred compensation (within the meaning of Section 409A) the payment of which is required to be delayed pursuant to the six-month delay rule set forth in Section 409A in order to avoid taxes or penalties under Section 409A, then Employer (or an affiliate thereof, as applicable) shall not pay such amount on the otherwise scheduled payment date but shall instead accumulate such amount and pay it, without interest, on the first day of the seventh month following such separation from service.

6.4 Treatment of Installments. For purposes of Section 409A, each of the installments of continued Base Salary referred to in Section Article III shall be deemed to be a separate payment as permitted under Treas. Reg. Sec. 1.409A-2(b)(2)(iii).

IN WITNESS WHEREOF, Employer has caused this Agreement to be executed by one of its duly authorized officers and Employee has individually executed this Agreement, each intending to be legally bound, as of the date first above written.

EMPLOYEE:

/s/ Caroline Stockdale
Caroline Stockdale

EMPLOYER:
First Solar, Inc.

By: /s/ Mark Widmar

Name printed: Mark Widmar

Title: CEO

Exhibit A

SEPARATION AGREEMENT AND RELEASE

I. Release. For good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the undersigned, with the intention of binding himself/herself, his/her heirs, executors, administrators and assigns, does hereby release and forever discharge First Solar, Inc., a Delaware corporation, and its present and former officers, directors, executives, agents, employees, affiliated companies, subsidiaries, successors, predecessors and assigns (collectively, the "Released Parties"), from any and all claims, actions, causes of action, demands, rights, damages, debts, accounts, suits, expenses, attorneys' fees and liabilities of whatever kind or nature in law, equity, or otherwise, whether now known or unknown (collectively, the "Claims"), which the undersigned now has, owns or holds, or has at any time heretofore had, owned or held against any Released Party, arising out of or in any way connected with the undersigned's employment relationship with First Solar, Inc., its subsidiaries, predecessors or affiliated entities (collectively, the "Company"), or the termination thereof, including, but not limited to, under (a) that certain Employment Agreement to which the undersigned is a party and pursuant to which this Separation Agreement and Release is being executed and delivered, other than as expressly provided in this Separation Agreement and Release, and any other agreement or arrangement with the Company, whether written or oral, to which the undersigned is a party and (b) any Federal, state or local statute, rule, or regulation, or principle of common, tort, contract or constitutional law, including but not limited to, the Fair Labor Standards Act of 1938, as amended, 29 U.S.C. §§ 201 et seq., the Equal Pay Act of 1963, as amended 29 U.S.C. §602(d), the Family and Medical Leave Act of 1993 ("FMLA"), as amended, 29 U.S.C. §§ 2601 et seq., Title VII of the Civil Rights Act of 1964, as amended, 42 U.S.C. §§ 2000e et seq., the Age Discrimination in Employment Act of 1967, as amended, 29 U.S.C. §§ 621 et seq., the Americans with Disabilities Act of 1990, as amended, 42 U.S.C. §§ 12101 et seq., the Genetic Information Nondiscrimination Act, 42 U.S.C. §§ 2000ff; the Worker Adjustment and Retraining Notification Act of 1988, as amended, 29 U.S.C. §§ 2101 et seq., the Employee Retirement Income Security Act of 1974, as amended, 29 U.S.C. §§ 1001 et seq., the Sarbanes-Oxley Act of 2002, as amended, and any other equivalent or similar Federal, state, or local statute; provided, however, that nothing herein shall release the Company (i) from its obligations to provide the undersigned with certain payments and benefits in connection with the undersigned's termination of employment under Section 1.4 of that certain Employment Agreement to which the undersigned is a party and pursuant to which this Separation Agreement and Release is being executed and delivered, (ii) from any claims by the undersigned arising out of any director and officer indemnification or insurance obligations in favor of the undersigned, (iii) from any director and officer indemnification obligations under the Company's by-laws, and (iv) from any claim for benefits under the First Solar, Inc. 401(k) Plan. The undersigned understands that, as a result of executing this Separation Agreement and Release, he/she will not have the right to assert that the Company or any other Released Party unlawfully terminated his/her employment or violated any of his/her rights in connection with his/her employment or otherwise.

The undersigned affirms that he/she has not filed or caused to be filed, and presently is not a party to, any Claim, complaint or action against any Released Party in any forum or form and that he/she knows of no facts which may lead to any Claim, complaint or action being filed against any Released Party in any forum by the undersigned or by any agency, group, or class of persons. The undersigned further affirms that he/she has been paid and/or has received all leave (paid or unpaid), compensation, wages, bonuses, commissions, and/or benefits to which he/she may be entitled and that no other leave (paid or unpaid), compensation, wages, bonuses, commissions and/or benefits are due to him/her from the Company, except as specifically provided in this Separation Agreement and Release. The undersigned furthermore affirms that he/she has no known workplace injuries or occupational diseases and has been provided and/or has not been denied any leave requested under the FMLA. If any agency or court assumes jurisdiction of any such Claim, complaint or action against any Released Party on behalf of the undersigned, the undersigned will request such agency or court to withdraw the matter.

[The undersigned furthermore affirms that if the undersigned was employed by the Company at any time in California, or if the undersigned resided in California at any time while employed by the Company, the undersigned waives all rights under California Civil Code Section 1542 (or any similar law, provision or statute of any other jurisdiction or authority), which states:

> A general release does not extend to claims which the creditor does not know or suspect to exist in his or her favor at the time of executing the release, which if known by him or her must have mutually affected his or her settlement with the debtor.]

The undersigned further declares and represents that he/she has carefully read and fully understands the terms of this Separation Agreement and Release and that he/she has been advised and had the opportunity to seek the advice and assistance of counsel with regard to this Separation Agreement and Release, that he/she may take up to and including 21 days from receipt of this Separation Agreement and Release, to consider whether to sign this Separation Agreement and Release, that he/she may revoke this Separation Agreement and Release within seven calendar days after signing it by delivering to the Company written notification of revocation, and that he/she knowingly and voluntarily, of his/her own free will, without any duress, being fully informed and after due deliberate action, accepts the terms of and signs the same as his/her own free act.

II. Protected Rights. The Company and the undersigned agree that nothing in this Separation Agreement and Release is intended to or shall be construed to affect, limit or otherwise interfere with any non-waivable right of the undersigned under any Federal, state or local law, including the right to file a charge or participate in an investigation or proceeding conducted by the Equal Employment Opportunity Commission ("EEOC") or to exercise any other right that cannot be waived under applicable law. The undersigned is releasing, however, his/her right to any monetary recovery or relief should the EEOC or any other agency pursue Claims on his/her behalf. Further, should the EEOC or any other agency obtain monetary relief on his/her behalf, the undersigned assigns to the Company all rights to such relief. Notwithstanding anything in this Separation Agreement and Release to the contrary, this Separation Agreement and Release is not intended to, and shall be interpreted in a manner that does not, limit or restrict the undersigned from exercising any legally protected whistleblower rights (including pursuant to Rule 21F under the Securities Exchange Act of 1934) or receiving an award for information provided to any governmental agency under any legally protected whistleblower rights.

III. Equitable Remedies. The undersigned acknowledges that a violation by the undersigned of any of the covenants contained in this Separation Agreement and Release would cause irreparable damage to the Company in an amount that would be material but not readily ascertainable, and that any remedy at law (including the payment of damages) would be inadequate. Accordingly, the undersigned agrees that, notwithstanding any provision of this Separation Agreement and Release to the contrary, the Company shall be entitled (without the necessity of showing economic loss or other actual damage) to injunctive relief (including temporary restraining orders, preliminary injunctions and/or permanent injunctions) in any court of competent jurisdiction for any actual or threatened breach of any of the covenants set forth in this Separation Agreement and Release in addition to any other legal or equitable remedies it may have.

IV. Return of Property. The undersigned shall return to the Company on or before DATE, all property of the Company in the undersigned's possession or subject to the undersigned's control, including without limitation any laptop computers, keys, credit cards, cellular telephones and files. The undersigned represents that he/she has not, and shall not, alter any of the Company's records or computer files in any way after DATE.

V. Severability. If any term or provision of this Separation Agreement and Release is invalid, illegal or incapable of being enforced by any applicable law or public policy, all other conditions and provisions of this Separation Agreement and Release shall nonetheless remain in full force and effect so long as the economic and legal substance of the transactions contemplated by this Separation Agreement and Release is not affected in any manner materially adverse to any party.

VI. **GOVERNING LAW. THIS SEPARATION AGREEMENT AND RELEASE SHALL BE DEEMED TO BE MADE IN THE STATE OF ARIZONA, AND THE VALIDITY, INTERPRETATION, CONSTRUCTION AND PERFORMANCE OF THIS SEPARATION AGREEMENT AND RELEASE IN ALL RESPECTS SHALL BE GOVERNED BY THE LAWS OF THE STATE OF ARIZONA WITHOUT REGARD TO ITS PRINCIPLES OF CONFLICTS OF LAW.**

Effective on the eighth calendar day following the date set forth below.

FIRST SOLAR, INC. EMPLOYEE

SAMPLE SAMPLE

Date: SAMPLE

CHANGE IN CONTROL SEVERANCE AGREEMENT

This **CHANGE IN CONTROL SEVERANCE AGREEMENT** (this " Agreement"), dated as of October 7, 2019, between First Solar, Inc., a Delaware corporation (the "Company"), and Caroline Stockdale (the "Executive").

RECITALS:

WHEREAS the Executive is a skilled and dedicated employee of the Company who has important management responsibilities and talents that benefit the Company;

WHEREAS the Board of Directors of the Company (the "Board") considers it essential to the best interests of the Company and its stockholders to assure that the Company and its Subsidiaries (as defined below) will have the continued dedication of the Executive, notwithstanding the possibility, threat or occurrence of a Change in Control (as define d below); and

WHEREAS the Board believes that it is imperative to diminish the distraction of the Executive inherently present by the uncertainties and risks created by the circumstances surrounding a Change in Control, and to ensure the Executive's full attention to the Company and its Subsidiaries during any such period of uncertainty.

AGREEMENT:

NOW, THEREFORE, in consideration of the mutual agreements, provisions and covenants contained herein, and intending to be legally bound hereby, the parties hereto agree as follows:

SECTION 1. Definitions. For purposes of this Agreement, the following terms shall have the meanings set forth below:

(a) "Accrued Rights" shall have the meaning set forth in Section 4(a)(iv).

(b) "Affiliate(s)" means, with respect to any specified Person, any other Person that, directly or indirectly, through one or more intermediaries, controls, is controlled by, or is under common control with, such specified Person.

(c) "Annual Base Salary" means the greater of the Executive's annual rate of base salary in effect (i) immediately prior to the Change in Control Date and (ii) immediately prior to the Termination Date.

(d) "Annual Bonus" means the target annual cash bonus the Executive is eligible to earn (assuming one hundred percent {100%) fulfillment of all elements of the formula under which such bonus would have been calculated) for the year in which the Termination Date occurs.

(e) "Bonus Amount" means, as of the Termination Date, the greater of (i) the Annual Bonus and (ii) the average of the annual cash bonuses payable to the Executive in respect of the three (3) calendar years immediately preceding the calendar year that includes the Termination Date or, if the Executive has not been employed for three (3) full calendar years preceding the calendar year that includes the Termination Date, the average of the annual cash bonuses payable to the Executive for the number of full calendar years prior to the Termination Date that Executive has been employed.

(f) "Cause" means that Employee (i) willfully breaches significant and material duties he/she is required to perform; (ii) commits misconduct damaging to the Employer or its Affiliates or subsidiaries, its reputation, products, services, or customers; (iii) commits a material act of fraud, embezzlement, theft, dishonesty, misrepresentation or other act of moral turpitude; (iv) violates any law or regulation; (v) commits unauthorized disclosure of any trade secret or confidential information of the Employer or its Affiliates or subsidiaries or breaches the Non Competition and Non-Solicitation Agreement between Employer and Employee dated as of the date hereof, as may be amended from time to time (the "Non-Competition Agreement"), the Confidentiality and Intellectual Property Agreement between Employer and Employee dated as of the date hereof, as may be amended from time to time (the "Confidentiality Agreement") or the Change in Control Agreement; (vi) fails to perform under this Agreement or fails to perform other duties owed to the Employer or its Affiliates or subsidiaries; (vii) is convicted of a felony or another crime which is materially injurious to the reputation of the Employer or its Affiliates or subsidiaries; (viii) is charged with a felony or a misdemeanor involving moral turpitude; exhibit s gross negligence in the course of his/her employment; (x) is ordered removed by a regulatory or other governmental agency pursuant to applicable law; or (xi) willfully fails to obey a material lawful direction from the Board.

(g) "Change in Control" has the meaning set forth in the First Solar, Inc. 2015 Omnibus Incentive Compensation Plan or its successor, provided that such event is a change in ownership or effective control of a corporation or a change in ownership of a substantial portion of the assets of a corporation, in each case, pursuant to Treasury Regulations Section 1.409A- 3(i)(S).occurs.

(h) "Change in Control Date" means the date on which a Change in Control

(i) "COBRA" shall have the meaning set forth in Section 4(a)(iii).

(j) "Code" means the Internal Revenue Code of 1986, as amended from time to time, or any successor statute thereto, and the regulations promulgated thereunder as in effect from time to time.

(k) "Disability" shall have the meaning set forth in the Employment Agreement.

(l) "Effective Date" shall have the meaning set forth in Section 2.

(m) "Employment Agreement" shall have the meaning set forth in Section 15.

(n) "Executive Tax Year" shall have the meaning set forth in Section 4(a)(iii).

(o) "Good Reason" means, without the Executive's express written consent, the occurrence of any one or more of the following:

(I) any material reduction in the authority, duties or responsibilities held by the Executive immediately prior to the Change in Control Date;

(II) any material reduction in the annual base salary or annual incentive opportunity of the Executive as in effect immediately prior to the Change in Control Date;

(III) any change of the Executive's principal place of employment to a location more than fifty (SO) miles from the Executive's principal place of employment immediately prior to the Change in Control Date;

(IV) any failure of the Company to pay the Executive any compensation when due;

(V) delivery by the Company or any Subsidiary of a written notice to the Executive of the intent to terminate the Executive's employment for any reason, other than Cause, death or Disability, in each case in accordance with this Agreement, regardless of whether such termination is intended to become effective during or after the Protection Period; or

(VI) any failure by the Company to comply with and satisfy the requirements of Section 9(c).

The Executive's right to terminate employment for Good Reason shall not be affected by the Executive's incapacity due to physical or mental illness. A termination of employment by the Executive for Good Reason for purposes of this Agreement shall be effectuated by giving the Company written notice ("Notice of Termination for Good Reason") of the termination setting forth in reasonable detail the specific conduct of the Company that constitutes Good Reason and the specific provisions of this Agreement on which the Executive relied, provided that such notice must be delivered to the Company no later than ninety (90) days after the occurrence of the event or events constituting Good Reason and the Company must be provided with at least thirty (30) days following the delivery of such Notice of Termination for Good Reason to cure such event or events. If such event or events are cured during such period, then the Executive will not be permitted to terminate employment for Good Reason as the result of such event or events. If the Company does not cure such event or events in such period, the termination of employment by the Executive for Good Reason shall be effective on the thirtieth{30th) day following the date when the Notice of Termination for Good Reason is given, unless the Company elects to treat such termination as effective as of an earlier date; provided, however, that so long as an event that constitutes Good Reason occurs during the Protection Period and the Executive delivers the Notice of Termination for Good Reason within ninety (90) days foll owing the occurrence of such event, the Company is provided with at least thirty (30) days following the delivery of such Notice of Termination for Good Reason to cure such event, and the Executive terminates his/her employment as of the thirtieth (30th) day following the date when the Notice of Termination for Good Reason is given (or as of an earlier date chosen by the Company), then for purposes of the payments, benefits and other entitlements set forth herein, the termination of the Executive's employment pursuant thereto shall be deemed to occur during the Protection Period.

(p) "Notice of Termination for Good Reason" shall have the meaning set forth in Section l(r).

(q) " Person" shall have the meaning as used in Section 13(d) of the Securities Exchange Act of 1934, as amended from time to time, or any successor statute thereto, and the regulations promulgated thereunder as in effect from time to time.

(r) "Protection Period" means the period commencing on the Change in Control Date and ending on the second anniversary thereof.

(s) "Qualifying Termination" means any termination of the Executive's employment (i) by the Company, other than for Cause, death or Disability, that is effective during the Protection Period or (ii) by the Executive for Good Reason during the Protection Period; provided that such termination constitutes a separation from service within the meaning of Section 409A.

(t) "Release" shall have the meaning set forth in Section 4(a)(vi).

(u) "Release Effective Date" means the date the Release becomes effective and irrevocable.

(v) "Subsidiary" means any entity in which the Company, directly or indirectly, possesses 50% or more of the total combined voting power of all classes of stock.

(w) "Successor" shall have the meaning set forth in Section 9(c).

(x) "Termination Date" means the date on which the termination of the Executive' s employment, in accordance with the terms of this Agreement, is effective.

SECTION 2. Effectiveness and Term. This Agreement shall become effective as of the date hereof (the "Effective Date") and shall remain in effect until the third (3rd) anniversary of the Effective Date, except that, beginning on the second anniversary of the Effective Date and on each anniversary thereafter, the term of this Agreement shall be automatically extended for an additional one-year period, unless the Company or the Executive provides the other party with sixty (60) days' prior written notice before the applicable anniversary that the term of this Agreement shall not be so extended. Notwithstanding the foregoing, in the event of a Change in Control during the term of this Agreement (whether the original term or the term as extended), this Agreement shall not thereafter terminate, and the term hereof shall be extended, until the Company and its Subsidiaries have performed all their obligations hereunder with no future performance being possible; provided, however, that this Agreement shall only be effective with respect to the first Change in Control that occurs during the term of this Agreement.

SECTION 3. Impact of a Change in Control on Equity Compensation Awards. In the event of a Qualifying Termination, notwithstanding any provision to the contrary (other than any such provision that expressly provides that this Section 3 of this Agreement does not apply (which provision shall be given full force and effect)) in any of the Company's equity-based, equity related or other long-term incentive compensation plans, practices, policies and programs (including the Company's 2015 Omnibus Incentive Compensation Plan) or any award agreements thereunder and subject to the occurrence of the Release Effective Date, (a) all outstanding stock options, stock appreciation rights and similar rights and awards then held by the Executive that are unexercisable or otherwise unvested shall automatically become fully vested and immediately exercisable, as the case may be, (b) unless otherwise specified in the Grant Agreement, all outstanding equity-based, equity-related and other long-term incentive awards then held by the Executive that are subject to performance-based vesting criteria shall automatically become fully vested and earned at a deemed performance level equal to the greater of (i) the projected actual performance through the date of the Qualifying Termination (as determined by the Compensation Committee in its sole discretion) and (ii) target performance level with respect to such awards and (c) all other outstanding equity-based, equity-related and long-term incentive awards, to the extent not covered by the foregoing clause (a) or (b), then held by the Executive that are unvested or subject to restrictions or forfeiture shall automatically become fully vested and all restrictions and forfeiture provisions related thereto shall lapse. For the avoidance of doubt, this Section 3 shall not apply to performance units granted after the Effective Date under an executive performance equity plan that byits explicit terms in not subject to this Section 3, for which any acceleration will be solely in accordance with the award agreements evidencing such units.

SECTION 4. Termination of Employment.

(a) Qualifying Termination. In the event of a Qualifying Termination, the Executive shall be entitled, subject to Section 4(a)(vi), to the following payments and benefits:

i. Severance Pay. The Company shall pay the Executive, in a lump sum cash payment on the thirty-sixth (36th) day following the Termination Date, subject to the occurrence of the Release Effective Date, an amount equal to two (2) times the sum of (A) the Executive's Annual Base Salary (which, as defined, is determined without regard to any reduction giving rise to Good Reason) and (B) the Bonus Amount; provided, however, that such amount . shall be paid in lieu of, and the Executive hereby waives the right to receive, any other cash severance payment the Executive is otherwise eligible to receive upon termination of employment under any severance plan, practice, policy or program of the Company or any Subsidiary or under any agreement between the Company and the Executive (the "Waived Agreements"). If the Company concludes that a payment or benefit due pursuant to the Waived Agreements is subject to Section 409A of the Code (rather than fitting within an exception to Section 409A), the Executive may not elect to receive a payment under this Agreement in lieu of such payment or benefit from the Waived Agreements. In such instance, any payment under this Agreement that is not subject to Section 409A shall be reduced to an amount equal to the amount received pursuant to the Waived Agreements.

ii. Prorated Annual Bonus. The Company shall pay the Executive, in a lump-sum cash payment on the thirty-sixth (36th) day following the Termination Date, sub j ect to the occurrence of the Release Effective Date, an amount equal to the product of (A) the Executive's Annual Bonus and (B) a fraction, the numerator of which is the number of days in the Company's fiscal year containing the Termination Date that the Executive was employed by the Company or any Affiliate, and the denominator of which is three hundred sixty-five (365).

iii. Continued Health Benefits. The Company shall, at its option and subject to Section 4(a)(vi), either (A) continue to provide medical and dental benefits to the Executive and the Executive's spouse and dependents at least equal to the benefits provided by the Company and its Subsidiaries generally to other active peer executives of the Company and its Subsidiaries, or (B) pay Executive the cost of obtaining equivalent coverage, in the case of each of clauses (A) and (B), for a period of time commencing on the Termination Date and ending on the date that is eighteen (18) months after the Termination Date; provided, however, that if the Executive becomes reemployed with another employer and is eligible to receive medical or dental benefits under another employer-provided plan, the medical and dental benefits described herein shall be secondary to those provided under such other plan during such applicable period of eligibility. Any provision of benefits pursuant to this Section 4(a)(iii) in one tax year of the Executive (the "Executive Tax Year") shall not affect the amount of such benefits to be provided in any other Executive Tax Year. The right to such benefits shall not be subject to liquidation or exchange for any other benefit. Executive agrees to make (and to cause his/her dependents to make) a timely election under the Consolidated Omnibus Budget Reconciliation Act of 1985, as amended ("COBRA") to the extent requested by Employer, to facilitate Employer's provision of continuation coverage. Notwithstanding anything to the contrary herein, to the extent necessary to satisfy Section l0S(h) of the Code and Section 2716 of the Public Health Service Act, including the nondiscrimination rules applicable to non grandfathered plans under the Patient Protection and Affordable Care Act of 2010, as amended, and the related regulations and guidance promulgated thereunder, the Company will be permitted to alter the manner in which benefits under this Section 4(a)(iii) are provided to Executive.

iv. Accrued Rights. The Executive shall be entitled to (A) payments of any unpaid salary, bonuses or other amounts earned or accrued through the Termination Date and reimbursement of any unreimbursed business expenses incurred through the Termination Date, (B) any payments explicitly set forth in any other benefit plans, practices, policies and programs in which the Executive participates, and (C) any payments the Company is or becomes obligated to make pursuant to Sections 6 and 11 (the rights to such payments, the "Accrued Rights"). The Accrued Rights payable pursuant to Section 4(a)(iv)(A) and Section 4(a)(iv)(B) shall be payable on their respective otherwise scheduled payment dates, provided that any amounts payable in respect of accrued but unused vacation shall be paid in a lump sum within 15 days following the Termination Date. The Accrued Rights payable pursuant to Section 4(a)(iv)(C) shall be payable at the times set forth in the applicable Section hereof.

v. Outplacement. Subject to Section 4(a)(vi), the Company shall reimburse the Executive for individual outplacement services to be provided by a firm of the Executive's choice or, at the Executive's election, provide the Executive with the use of office space, office supplies, and secretarial assistance satisfactory to the Executive. The aggregate expenditures of the Company pursuant to this paragraph shall not exceed Twenty Thousand Dollars ($20,000). Notwithstanding anything to the contrary in this Agreement, the outplacement benefits under this Section 4(a)(v) shall be provided to the Executive for no longer than the one-year period following the Termination Date, and the amount of any outplacement benefits or office space, office supplies and secretarial assistance provided to the Executive in any Executive Tax Year shall not affect the amount of any such outplacement benefits or office space, office supplies and secretarial assistance provided to the Executive in any other Executive Tax Year.

vi. Release of Claims. Notwithstanding any prov1s1on of this Agreement to the contrary, unless on or prior to the thirty-sixth (36th) day following the Termination Date, the Executive has executed and delivered a Separation Agreement and Release (the "Release") substantially in the form of Exhibit A to the employment agreement between the Executive and the Company and the Release Effective Date shall have occurred, (A) no payments shall be paid or made available to the Executive under Section 3, 4(a)(i) or 4{a)(ii) (B) the Company shall be relieved of all obligations to provide or make available any further benefits to the Executive pursuant to Section 4(a)(iii) and 4(a)(v) and (C) the Executive shall be required to repay the Company, in cash, within five business days after written demand

is made therefor by the Company, an amount equal to the value of any benefits received by the Executive pursuant to Section 4(a)(iii) and 4(a)(v) prior to such date.

vii. Clawback. All payments made to the Executive pursuant to this Agreement shall be subject to clawback by Employer to the extent required by applicable law or the policies of the Company as in effect from time to time.

viii. Section 280G; Best Net. If any of the payments or benefits received or to be received by the Executive (including, without limitation, any payment or benefits received in connection with a Change in Control or the Executive's termination of employment, whether pursuant to the terms of this Agreement or any other plan, arrangement or agreement, or otherwise) {all such payments collectively referred to herein as the "280G Payments") constitute "parachute payments" within the meaning of Section 280G of the Code and would, but for this Section 4.9(a)(viii), be subject to the excise tax im posed under Section 4999 of the Code (the "Excise Tax"), then prior to making the 280G Payments, a calculation shall be made comparing (i) the Net Benefit (as defined below) to the Executive of the 280G Payments after payment of the Excise Tax to (ii) the Net Benefit: to the Executive if the 280G Payments are limited to the extent necessary to avoid being subject to the Excise Tax. Only if the amount calculated under (i) above is less than the amount under (ii) above will the 280G Payments be reduced to the minimum extent necessary to ensure that no portion of the 280G Payments is subject to the Excise Tax. "Net Benefit" shall mean the present value of the 280G Payments net of all federal, state, local, foreign income, employment, and excise taxes. Any reduction made pursuant to this Section 4(a)(viii) shall be made in a manner determined by the Company that is consistent with the requirements of Section 409A. All calculations and determinations under this Section 4(a}(viii) shall be made by an independent accounting firm or independent tax counsel appointed by the Company (the "Tax Counsel") whose determinations shall be conclusive and binding on the Company and the Executive for all purposes. For purposes of making the calculations and determinations required by this Section 4(a)(viii), the Tax Counsel may rely on reasonable, good fai th assumptions and approximations concerning the application of Section 280G and Section 4999 of the Code. The Company and the Executive shall furnish the Tax Counsel with such information and documents as the Tax Counsel may reasonably request in order to make its determinations under this Section 4(a)(viii). The Company shall bear all costs the Tax Counsel may reasonably incur in connection with its services.

(b) Termination on Account of Death or Disability; Non-Qualifying Termination. In the event of any termination of Executive's employment other than a Qualifying Termination, the Executive shall not be entitled to any additional payments or benefits from the Company under this Agreement, other than payments or benefits with respect to the Accrued Rights.

SECTION 5. Section 409A.

(a) It is intended that the provisions of this Agreement comply with Section 409A of the Code, as amended, and the regulations thereunder as in effect from time to time (collectively, "Section 409A"), and all provisions of this Agreement shall be construed and interpreted either to (i) exempt any compensation from the application of Section 409A, or (ii) comply with the requirements for avoiding taxes or penalties under Section 409A.

(b) Neither the Executive nor any creditor or beneficiary of the Executive shall have the right to subject any deferred compensation (within the meaning of Section 409A} payable under this Agreement or under any other plan, policy, arrangement or agreement of or with the Company or any of its Affiliates (this Agreement and such other plans, policies, arrangements and agreements, the "Company Plans"} to any anticipation, alienation, sale, transfer, assignment, pledge, encumbrance, attachment or garnishment. Except as permitted under Section 409A, any deferred compensation (within the meaning of Section 409A) payable to or for the benefit of the Executive under any Company Plan may not be reduced by, or offset against, any amount owing by the Executive to the Company or any of its Affiliates.

(c) If, at the time of the Executive's separation from service (within the meaning of Section 409A), (i) the Executive shall be a specified employee (within the meaning of Section 409A and using the identification methodology selected by the Company from time to time) and (ii) the Company shall make a good faith determination

that an amount payable under a Company Plan constitutes deferred compensation (within the meaning of Section 409A) the payment of which is required to be delayed pursuant to the six-month delay rule set forth in Section 409A to avoid taxes or penalties under Section 409A, then the Company (or an Affiliate thereof, as applicable) shall not pay such amount on the otherwise scheduled payment date but shall instead accumulate such amount and pay it, without interest, onthe first day of the seventh month following such separation from service. To the extent required by Section 409A, any payment or benefit that would be considered deferred compensation subject to, and not exempt from, Section 409A, payable or provided upon a termination of the Executive's employment shall only be paid or provided to the Executive upon the Executive's separation from service (within the meaning of Section 409A).

SECTION 6. No Mitigation or Offset; Enforcement of this Agreement.

(a) The Company's obligation to make the payments provided for in this Agreement and otherwise to perform its obligations hereunder shall not be affected by any set off, counterclaim, recoupment, defense or other claim, right or action that the Company may have against the Executive or others. In no event shall the Executive be obligated to seek other employment or take any other action by way of mitigation of the amounts payable to the Executive under any of the provisions of this Agreement and, except as otherwise expressly provided for in this Agreement, such amounts shall not be reduced whether or not the Executive obtains other employment.

(b) The Company shall reimburse, upon the Executive's demand, any and all reasonable legal fees and expenses that the Executive may incur in good faith prior to the second anniversary of the expiration of the term of this Agreement as a result of any contest, dispute or proceeding (regardless of whether formal legal proceedings are ever commenced and regardless of the outcome thereof and including all stages of any contest, dispute or proceeding) by the Company, the Executive or any other Person with respect to the validity or enforceability of, or liability under, any provision of this Agreement or any guarantee of performance thereof (including as a result of any contest by the Executive regarding the amount of any payment owed pursuant to this Agreement). Notwithstanding anything to the contrary in this Agreement, (i) any reimbursement for any fees and expenses under this Section 6 shall be made promptly and no later than the end of the Executive Tax Year following the Executive Tax Year in which the fees or expenses are incurred, {ii) the amount of fees and expenses eligible for reimbursement under this Section 6 during any Executive Tax Vear shall not affect the fees and expenses eligible for reimbursement in another Executive Tax Year, and (iii) no right to reimbursement under this Section 6 shall be subject to liquidation or exchange for any other payment or benefit.

SECTION 7. Non-Exclusivity of Rights. Except as specifically provide d in Section 4(a)(i), nothing in this Agreement shall prevent or limit the Executive's continuing or future participation in any plan, practice, policy or program provided by the Company or a Subsidiary for which the Executive may qualify, nor shall anything in this Agreement limit or otherwise affect any rights the Executive may have under any contract or agreement with the Company or a Subsidiary. Vested benefits and other amounts that the Executive is otherwise entitled to receive under any incentive compensation (including any equity award agreement), deferred compensation, retirement, pension or other plan, practice, policy or program of, or any contract or agreement with, the Company or a Subsidiary shall be payable in accordance with the terms of each such plan, practice, policy, program, contract or agreement, as the case may be, except as explicitly modified by this Agreement.

SECTION 8. Withholding. The Company may deduct and withhold from any amounts payable under this Agreement such Federal, state, local, foreign or other taxes as are required to be withheld pursuant to any applicable law or regulation.

SECTION 9. Assignment.

(a) This Agreement is personal to the Executive and, without the prior written consent of the Company, shall not be assignable by the Executive otherwise than by will or the laws of descent and distribution, and any assignment in violation of this Agreement shall be void.

(b) Notwithstanding the foregoing Section 9(a), this Agreement and all rights of the Executive hereunder shall inure to the benefit of, and be enforceable by, the Executive's personal or legal representatives, executors, administrators, successors, heirs, distributees, devisees and legatees. If the Executive should die while any amounts would still be payable to Executive hereunder if Executive had continued to live, all such amounts, unless otherwise provided herein, shall be paid in accordance with the terms of this Agreement to the Executive's devisee, legatee or other designee or, should there be no such designee, to the Executive's estate.

(c) The Company shall require any successor (whether direct or indirect, by purchase, merger, consolidation or otherwise) to all or substantially all of the business or assets of the Company (a "Successor") to assume and agree to perform this Agreement in the same manner and to the same extent that the Company would have been required to perform it if no such succession had taken place. If there shall be a Successor, (i) the term " Com pan y" shall mean the Company as herein before defined and any Successor and any permitted assignee to which this Agreement is assigned and (ii) the term "Board" shall mean the Board as herein before defined and the board of directors or equivalent governing body of any Successor and any permitted assignee to which this Agreement is assigned.

SECTION 10. Dispute Resolution.

(a) Except as otherwise specifically provided herein, the Executive and the Company each hereby irrevocably submit to the exclusive jurisdiction of the United States District Court of Arizona (or, if subject matter jurisdiction in that court is not available, in any state court located within the city of Phoenix, Arizona} over any dispute arising out of or relating to this Agreement. Except as otherwise specifically provided in this Agreement, the parties undertake not to commence any suit, action or proceeding arising out of or relating to this Agreement in a forum other than a forum described in this Section l0(a}; provided, however, that nothing herein shall preclude the Company or the Executive from bringing any suit, action or proceeding in any other court for the purposes of enforcing the provisions of this Section 10 or enforcing any judgment obtained by the Company or the Executive.

(b) The agreement of the parties to the forum described in Section l0(a} is independent of the law that may be applied in any suit, action or proceeding and the parties agree to such forum even if such forum may under applicable law choose to apply non-forum law. The parties hereby waive, to the fullest extent permitted by applicable law, any objection that they now or hereafter have to personal jurisdiction or to the laying of venue of any such suit, action or proceeding brought in an applicable court described in Section l0(a), and the parties agree that they shall not attempt to deny or defeat such personal jurisdiction by motion or other request for leave from any such court. The parties agree that, to the fullest extent permitted by applicable law, a final and non-appealable judgment in any suit, action or proceeding brought in any applicable court described in Section l0(a) shall be conclusive and binding upon the parties and may be enforced in any other jurisdiction.

(c) The parties hereto irrevocably consent to the service of any and all process in any suit, action or proceeding arising out of or relating to this Agreement by the mailing of copies of such process to such party at such party's address specified in Section 17.

(d) Each party hereto hereby waives, to the fullest extent permitted by applicable law, any right it may have to a trial by jury in respect of any suit, action or proceeding arising out of or relating to this Agreement. Each party hereto (i) certifies that no representative, agent or attorney of any other party has represented, expressly or otherwise, that such party would not, in the event of any suit, action or proceeding, seek to enforce the foregoing waiver and (ii} acknowledges that it and the other parties hereto have been induced to enter into this Agreement by, among other things, the mutual waiver and certifications in this Section l0(d}.

SECTION 11. Default in Payment. Any payment not made within ten (10) business days after it is due in accordance with this Agreement shall thereafter bear interest, compounded annually, at the prime rate in effect from time to time at Citibank, N.A., or any successor thereto. Such interest shall be payable at the same time as the corresponding payment is payable.

SECTION 12. **GOVERNING LAW. THIS AGREEMENT SHALL BE DEEMED TO BE MADE IN THE STATE OF ARIZONA, AND THE VALIDITY, INTERPRETATION,CONSTRUCTION AND PERFORMANCE OF THIS AGREEMENT IN ALL RESPECTS SHALL BE GOVERNED BY THE LAWS OF THE STATE OF ARIZONA WITHOUT REGARD TO ITS PRINCIPLES OF CONFLICTS OF LAW.**

SECTION 13. Amendment; No Waiver. No provision of this Agreement may be amended, modified, waived or discharged except by a written document signed by the Executive and a duly authorized officer of the Company. The failure of a party to insist upon strict adherence to any term of this Agreement on any occasion shall not be considered a waiver of such party's rights or deprive such party of the right thereafter to insist upon strict adherence to that term or any other term of this Agreement. Except as provided in Section l(r), no failure or delay by either party in exercising any right or power hereunder will operate as a waiver thereof, nor will any single or partial exercise of any such right or power, or any abandonment of any steps to enforce such right or power, preclude any other or further exercise thereof or the exercise of any other right or power. No agreements or representations, oral or otherwise, express or implied, with respect to the subject matter hereof have been made by either party that are not set forth expressly in this Agreement.

SECTION 14. Severability. If any term or provision of this Agreement is invalid, illegal or incapable of being enforced by any applicable law or public policy, all other conditions and provisions of this Agreement shall nonetheless remain in full force and effect so long as the economic and legal substance of the transactions contemplated by this Agreement is not affected in any manner materially adverse to any party. Upon any such determination that any term or provision is invalid, illegal or incapable of being enforced, the parties hereto shall negotiate in good faith to modify this Agreement so as to effect the original intent of the parties as closely as possible in a mutually acceptable manner in order that the transactions contemplated hereby be consummated as originally contemplated to the fullest extent possible.

SECTION 15. Entire Agreement. This Agreement, along with the employment agreement (the "Employment Agreement"), the Non-Competition Agreement (as defined in the Employment Agreement) and the Confidentiality Agreement (as defined in the Employment Agreement), in each case, entered into with the Company as of the date hereof, as may be amended from time to time, set forth the entire agreement of the parties hereto in respect of the subject matter contained herein and supersedes all prior agreements, promises, covenants, arrangements, communications, representations or warranties, whether oral or written, by any officer, employee or representative of any party hereto, and any prior agreement of the parties hereto in respect of the subject matter contained herein is hereby terminated and canceled. None of the parties shall be liable or bound to any other party in any manner by any representations and warranties or covenants relating to such subject matter except as specifically set forth herein.

SECTION 16. Survival. The right s and obligations of the parties under the provisions of this Agreement, including Sections 6, 10, 11 and 12, shall survive and remain binding and enforceable, notwithstanding the expiration of the Protection Period or the term of this Agreement, the termination of the Executive's employment with the Company for any reason or any settlement of the financial rights and obligations arising from the Executive's employment, to the extent necessary to preserve the intended benefits of such provisions.

SECTION 17. Notices. All notices or other communications required or permitted by this Agreement will be made in writing and all such notices or communications will be deemed to have been duly given when delivered or (unless otherwise specified) mailed by United States certified or registered mail, return receipt requested, postage prepaid, addressed as follows:

If to the Company: First Solar, Inc.
350 West Washington Street Suite 600
Tempe, AZ 85281
Attention: Corporate Secretary

If to the Executive: To the Executive's then current address on file with the Company

or to such other address as any party may have furnished to the other in writing in accordance herewith, except that notices of change of address shall be effective only upon receipt.

SECTION 18. Headings and References. The headings of this Agreement are inserted for convenience only and neither constitute a part of this Agreement nor affect in any way the meaning or interpretation of this Agreement. When a reference in this Agreement is made to a Section, such reference shall be to a Section of this Agreement unless otherwise indicated.

SECTION 19. Counterparts. This Agreement may be executed in one or more counterparts (including via facsimile}, each of which shall be deemed to be an original, but all of which together shall constitute one and the same instrument.

SECTION 20. Interpretation. For purposes of this Agreement, the words "include" and "including", and variations thereof, shall not be deemed to be terms of limitation but rather shall be deemed to be followed by the words "without limitation". The term "or" is not exclusive. The word "extent" in the phrase "to the extent" shall mean the degree to which a subject or other thing extends, and such phrase shall not mean simply "if" .

SECTION 21. Time of the Essence. The parties hereto acknowledge and agree that time is of the essence in the performance of the obligations of this Agreement and that the parties shall strictly adhere to any timelines herein.

IN WITNESS WHEREOF, this Agreement has been executed by the parties as of the date first written above.

By: /s/ Mark Widmar
Its: _____

Signed: /s/ Caroline Stockdale
Employee
Printed Name: Caroline Stockdale

9/23/2019
Date

First Solar, Inc.
Confidentiality and Intellectual Property Agreement

Employee: **Caroline Stockdale**

Place of Signing: Tempe, Arizona

In consideration of my at-will employment with First Solar, Inc. or one of its subsidiary companies (collectively, the "Company"), for the compensation and benefits provided to me, and for the Company's agreement to provide me with access to experience, knowledge, and Confidential Information (as defined below) in the course of such employment relating to the methods, plans, and operations of the Company and its suppliers, clients, and customers I enter into the following Confidentiality and Intellectual Property Agreement (the "Agreement") and agree as follows:

1. The Agreement shall be effective as of October 7, 2019, provided that, the Company shall have obtained a resolution from the Board of Directors of the Company appointing me as Executive Vice President, Human Resources.

2. Unless otherwise agreed to in writing by the parties, nothing herein shall be deemed to constitute a transfer, sale or conveyance of First Perform's (consulting company owned by signatory) Intellectual Property that existed prior to this Agreement. Such materials may be used to enhance the performance of First Solar but this will not constitute a transfer of such intellectual property.

3. I will promptly and fully disclose to the Company all developments, inventions, ideas, methods, discoveries, designs, and innovations (collectively referred to herein as "Developments"), whether patentable or not, relating wholly or in part to my work for the Company or resulting wholly or in part from my use of the Company's materials or facilities, which I may make or conceive, whether or not during working hours, whether or not using the Company's materials, whether or not on the Company facilities, alone or with others, at any time during my employment or within ninety (90) days after termination thereof, and I agree that all such Developments shall be the exclusive property of the Company, and that I shall have no proprietary, moral or shop rights in connection therewith.

4. I will assign, and do hereby assign, to the Company or the Company's designee, my entire right, title and interest in and to all such Developments including all trademarks, copyrights, moral rights and mask work rights in or relating to such Developments, and any patent applications filed and patents granted thereon including those in foreign countries; and I agree, both during my employment by the Company and thereafter, to execute any patent or other papers deemed necessary or appropriate by the Company for filing with the United States or any other country covering such Developments as well as any papers that the Company may consider necessary or helpful in obtaining or maintaining such patents during the prosecution of patent applications thereon or during the conduct of any interference, litigation, or any other matter in connection therewith, and to transfer to the Company any such patents that may be issued in my name. If, for some reason, I am unable to execute such patent or other papers, I hereby irrevocably designate and appoint the Company and its designees and their duly authorized officers and agents, as the case may be, as my agent and attorney in fact to act for and in my behalf and stead to execute any documents and to do all other lawfully permitted acts in connection with the foregoing. I agree to cooperate with and assist the Company as requested by the Company to provide documentation reflecting the Company's sole and complete ownership of the Developments. All expenses incident to the filing of such applications, the prosecution thereof and the conduct of any

such interference, litigation, or other matter will be borne by the Company. This Section 4 shall survive the termination of this Agreement.

5. Subject to Section 5 below, I will not, either during my employment with the Company or at any time thereafter, improperly use, disclose or authorize, or assist anyone else to disclose or use or make known for anyone's benefit, any information, knowledge or data of the Company or any supplier, client, or customer of the Company in any way acquired by me during or as a result of my employment with the Company, whether before or after the date of this Agreement (hereinafter the "Confidential Information"), publicly or outside the Company, its subsidiaries, agents, employees, officers and directors. Such Confidential Information shall include the following:

(a) Information of a business nature including financial information and information about sales, marketing, purchasing, prices, costs, suppliers and customers;

(b) Information pertaining to future developments including research and development, new product ideas and developments, strategic plans, and future marketing and merchandising plans and ideas;

(c) Information and material that relate to the Company's manufacturing methods, machines, articles of manufacture, compositions, inventions, engineering services, technological developments, "know-how", purchasing, accounting, merchandising and licensing;

(d) Trade secrets of the Company, including information and material with respect to the design, construction, capacity or method of operation of the Company's equipment or products and information regarding the Company's customers and sales or marketing efforts and strategies;

(e) Software in various stages of development (source code, object code, documentation, diagrams, flow charts), designs, drawings, specifications, models, data and customer information; and

(f) Any information of the type described above that the Company obtained from another party and that the Company treats as proprietary or designates as confidential, whether or not owned or developed by the Company.

6. It is understood and agreed that the term "Confidential Information" shall not include information that is generally available to the public, other than through any act or omission on my part in breach of this Agreement.

7. I acknowledge that: (a) such Confidential Information derives its value to the Company from the fact that it is maintained as confidential and secret and is not readily available to the general public or the Company's competitors; (b) the Company undertakes great effort and sufficient measures to maintain the confidentiality and secrecy of such information; and (c) such Confidential Information is protected and covered by this Agreement regardless of whether or not such Confidential Information is a "trade secret" under applicable law. I further acknowledge and agree that the obligations and restrictions herein are reasonable and necessary to protect the Company's legitimate business interests, and that this Agreement does not impose an unreasonable or undue burden on me and will not prevent me from earning a livelihood subsequent to the termination of my employment with the Company. I agree to comply with each of the restrictive covenants contained in this Agreement in accordance with its terms, and will not, and I hereby agree to waive and release any right or claim to, challenge the reasonableness, validity or enforceability of any of the restrictive covenants contained in this Agreement.

8. I will deliver to the Company promptly upon request, and, in any event, on the date of termination of my employment, all documents, copies thereof and other materials in my possession, including any notes or memoranda prepared by me, pertaining to the business of the Company, whether or not including any Confidential Information, and thereafter will promptly deliver to the Company any documents and copies thereof pertaining to the business of the Company that come into my possession.

9. I represent that I have no agreements with or obligations to others with respect to any innovations, developments, or information that could conflict with any of the foregoing.

10. If this Agreement is subject to any applicable local laws, and to the extent of inconsistency with such applicable laws, this Agreement will be construed, to the extent possible, in a manner that is consistent with such applicable laws. The invalidity or unenforceability of any provision of this Agreement, whether in whole or in part, shall not in any way affect the validity and/or enforceability of any of the other provisions of this Agreement. Any invalid or unenforceable provision or portion thereof shall be deemed severable to the extent of any such invalidity or unenforceability. The restrictions contained in this Agreement are reasonable for the purpose of preserving for the Company and its affiliates the proprietary rights, intangible business value and Confidential Information of the Company and its affiliates. If it is determined by a court of competent jurisdiction that any of the restrictions or language in this Agreement is for any reason invalid or unenforceable, the parties desire and agree that the court revise any such restrictions or language so as to render it valid and enforceable to the fullest extent allowed by law. If any restriction or language in this Agreement is for any reason invalid or unenforceable and cannot by law be revised so as to render it valid and enforceable, then the parties desire and agree that the court strike only the invalid and unenforceable language and enforce the balance of this Agreement to the fullest extent allowed by law. Pursuant to the Defend Trade Secrets Act of 2016 (18 USC Chapter 90, as amended 11 May 2016), notice is hereby given that an individual shall not be held criminally or civilly liable under any federal or state trade secret law for the disclosure of a trade secret that: (a) is made (i) in confidence to a federal, state, or local government official, either directly or indirectly, or to an attorney; and (ii) solely for the purpose of reporting or investigating a suspected violation of law; or (b) is made in a complaint or other document filed in a lawsuit or other proceeding, if such filing is made under seal.

11. I agree that any breach or threatened breach by me of any of the provisions in this Agreement cannot be remedied solely by the recovery of damages. I expressly agree that upon a threatened breach or violation of any of such provisions, the Company, in addition to all other remedies, shall be entitled as a matter of right, and without posting a bond or other security, to emergency, preliminary, and permanent injunctive relief in any court of competent jurisdiction. Nothing herein, however, shall be construed as prohibiting the Company from pursuing, in concert with an injunction or otherwise, any other remedies available at law or in equity for such breach or threatened breach, including the recovery of damages.

12. This Agreement is made in consideration of my employment with the Company.

13. Upon termination of my employment with the Company, I shall, if requested by the Company, reaffirm my recognition of the importance of maintaining the confidentiality of the Company's Confidential Information and reaffirm all of my obligations set forth herein. The provisions, obligations, and restrictions in this Agreement shall survive the termination of my employment, and will be binding on me whether or not the Company requests a re-affirmation.

14. Notwithstanding anything in this Agreement to the contrary, this Agreement is not intended to, and shall be interpreted in a manner that does not, limit or restrict me from exercising my legally protected whistleblower rights (including pursuant to Rule 21F under the Securities Exchange Act of 1934).

15. This Agreement, my Employment Agreement with the Company (the "Employment Agreement"), the Non-Competition Agreement (as defined in the Employment Agreement) and the Change in Control Agreement (as defined in the Employment Agreement) represent the full and complete understanding between me and the Company with respect to the subject matter hereof and supersede all prior representations and understandings, whether oral or written regarding such subject matter. This Agreement may not be changed, modified, released, discharged, abandoned or otherwise terminated, in whole or in part, except by an instrument in writing signed by both the Company and me. My obligations under this Agreement shall be binding upon my heirs, executors, administrators, or other legal representatives or assigns, and this Agreement shall inure to the benefit of the Company, its successors, and assigns.

16. This Agreement shall be governed by and construed and enforced in accordance with the laws of the State of Arizona without reference to principles of conflict of laws. Any judicial action commenced relating in any way to this Agreement including the enforcement, interpretation, or performance of this Agreement, shall be commenced and maintained in a court of competent jurisdiction located in Phoenix, Arizona. In any action to enforce this Agreement, the prevailing party shall be entitled to recover its litigation costs, including its attorneys' fees. The parties hereby waive and relinquish any right to a jury trial and agree that any dispute shall be heard and resolved by a court and without a jury. The parties further agree that the dispute resolution, including any discovery, shall be accelerated and expedited to the extent possible. Each party's agreements in this Section 16 are made in consideration of the other party's agreements in this Section 16, as well as in other portions of this Agreement.

17. As used in this Agreement, words such as "herein," "hereinafter," "hereby" and "hereunder," and the words of like import refer to this Agreement, unless the context requires otherwise. The words "include," "includes" and "including" shall be deemed to be followed by the phrase "without limitation".

Signed:

/s/ Caroline Stockdale
Employee
Printed Name: Caroline Stockdale

9/24/2019
Date

Agreed to by First Solar, Inc.

By: /s/MarkWidmar

Its: _____

NON-COMPETITION AND NON-SOLICITATION AGREEMENT

In consideration of In consideration of Employee's(as defined below) entering into at-will employment with Employer (as defined below) or one of its subsidiary companies, the compensation and benefits provided to Employee including those set forth in the Employment Agreement, Change in Control Severance Agreement and Confid enti ality and Intellectual Property Agreement (the Confidentiality Agreement), in each case, dated as of the date hereof, as may be amended from time to time, and Employer's agreement to provide Employee with access to Employer' s confidential information, intellectual property and trade secrets, access to its customers and other promises made below, Employee enters into the following non-competition an d non solicitation agreement:

This Non-Competition and Non-Solicitation Agreement ("Agreement") is effective by and between Caroline Stockdale ("Employee") and First Solar, Inc. ("Employer") as of October 7, 2019, provided that Employer has obtained a resolution from the Board of Directors of Employer appointing Employee as Executive Vice President, Human Resources, by such date.

WHEREAS, Employee desires to be employed by Employer and Employer has agreed to employ Employee in the current position of Employee with Employer;

WHEREAS, because of the nature of the Employee's duties, in teh performance of such duties, Employee will have access to and will necessarily utilize sensitive, secret and proprietary data and information, the value of which derives from its secrecy from Employer's competitors, which, like Employer, sells products and services throughout the world;

WHEREAS, Employee and Employer acknowledge and agree that Employee's conduct in the manner prohibited by this Agreement during, or for the period specified in this Agreement following the termination of, Employee's employment with Employer, would jeopardize Employer's Confidential Information (as defined in the Confidentiality Agreement) and the goodwill Employer has developed and generated over a period of years, and would cause Employer to experience unfair competition and immediate, irreparable harm; and

WHEREAS, in consideration of Employer's hiring Employee as Executive Vice President, Human Resources, Employee therefore has agreed to the terms of this Agreement, the Employment Agreement and the Confidentiality Agreement, and specifically to the restrictions contained herein.

Therefore, Employee and Employer hereby agree as follows:

THE FOLLOWING ARE IMPORTANT RESTRICTIONS ON EMPLOYEE IMPOSED BY EMPLOYER AS A CONDITION OF EMPLOYMENT. ONCE EMPLOYEE SIGNS THIS AGREEMENT, IT IS BINDING ON EMPLOYEE. EMPLOYEE'S SIGNATURE ON THIS AGREEMENT SIGNIFIES THAT EMPLOYEE (I) READ THESE RESTRICTIONS CAREFULLY BEFORE SIGNING THIS AGREEMENT, (II) UNDERSTANDS THE AGREEMENT'S TERMS, AND (III) ASSENTS TO ABIDE BY THESE RESTRICTIONS.

1. **Nature and Period of Restriction.** At all times during Employee's employment and for a period of twelve (12) months after the termination of employment (for any reason, including discharge or resignation) with Employer (the "Restricted Period"), Employee agrees as follows:

1.1. Employee agrees not to engage or assist, in any way or In any capacity, anywhere in the Territory (as defined below), either directly or indirectly, (a) in the business of the development, sale, marketing, manufacture or installation that would be in direct competition with of any type of product sold, developed, marketed, manufactured or installed by Employer during Employee's employment with Employer, including photovoltaic modules, or (b) in any other activity in direct competition or that would be in direct competition with the business of Employer as that business exists and is conducted (or with any business planned or seriously considered, of which Employee has knowledge) during Employee's employment with Employer. In addition and in particular, Employee agrees not to sell, market, provide or distribute, or endeavor to sell, market, provide or distribute, in any way, directly or indirectly, on behalf of Employee or any other person or entity, any products or services competitive with those of Employer to any person or entity which is or was an actual or prospective customer of Employer at any time during Employee's employment by Employer . For purposes of this Agreement, Employer acknowledges and agrees that engaging in the electric power business that uses any generation technology other than solar power is not in competition with Employer.

1.2. "Territory" for purposes of this Agreement means Africa, Asia (including China and India), Australia, Europe, North America, Latin America, South America, the United States of America, Arizona and Maricopa County.

1.3. Employee agrees not to solicit, recruit, hire, employ, or attempt to hire or employ, or assist any other person or entity in the recruitment or hiring of, any person who is (or was) an employee of Employer, and agrees not to otherwise urge, induce or seek to induce any person to terminate his/her employment with Employer.

1.4. The parties understand and agree that the restrictions set forth in the paragraphs in this Section 1 also extend to Employee's recommending or directing any such actual or prospective customers to any other competitive concerns, or assisting in any way any competitive concerns in soliciting or providing products or services to such customers, whether or not Employee personally provides any products or services directly to such customers. For purposes of this Agreement, a prospective customer is one that Employer solicited or with which Employer otherwise sought to engage in a business transaction during the time that Employee Is or was employed by Employer.

1.5. Employee and Employer acknowledge and agree that Employer has expended substantial amounts of time, money and effort to develop business strategies, customer relationships, employee relationships, trade secrets and goodwill and to build an effective organization and that Employer has a legitimate business interest and right in protecting those assets as well as any similar assets that Employer may develop or obtain. Employee and Employer acknowledge that Employer is entitled to protect and preserve the going concern value of Employer and its business and trade secrets to the extent permitted by law. Employee acknowledges and agrees the restrictions imposed upon Employee under this Agreement are reasonable and necessary for the protection of Employer's legitimate interests, including Employer's Confidential Information, intellectual property, trade secrets and goodwill. Employee and Employer acknowledge that Employer is engaged in a highly competitive business, that Employee ls expected to serve a key role with Employer, that Employee will have access to Employer's Confidential In formation, t hat Employer's business and customers and prospective customers are located around the world, and that Employee could compete with Employer from virtually any location in the world. Employ ee acknowledges and agrees that the restrictions set forth In this Agreement do not impose any substantial hardship on Employee and that Employee will reasonably be able to earn a livelihood without violating any provision of this Agreement. Employee acknowledges and agrees that, In addition to Employer's agreement to hire him/her, part of the consideration for the restrictions In this Section 1 consists of Employer's agreement to make severance payments as set forth in the separate Employment Agreement between Employer and Employee.

1.6. Employee agrees to comply with each of the restrictive covenants contained in this Agreement in accordance with its terms, and Employee shall not, andhereby agrees to waive and release any right or claim to, challenge the reasonableness, validity or enforceability of any of the restrictive covenants contained in this Agreement.

2. **Notice by Employee to Employer**. Prior to engaging in any employment or business during the Restricted Period, Employee agrees to provide prior written notice (by certified mail) to Employer in accordance with Section 6, stating the description of the activities or position sought to be undertaken by Employee, and to provide such

further information as Employer may reasonably request in connection therewith (including the location where the services would be performed and the present or former customers or employees of Employer anticipated to receive such products or services). To the extent Employer reasonably believes that the proposed engagement violates the restrictive covenants in this Agreement, Employer shall be free to object or not to object, in its unfettered discretion, and the parties agree that any actions taken or not taken by Employer with respect to any other employees or former employees shall have no bearing whatsoever on Employer's decision or on any questions regarding the enforceability of any of these restraints with respect to Employee.

3. **Notice to Subsequent Employer.** Prior to accepting employment with any other person or entity during the Restricted Period, Employee shall provide such prospective employer with written notice of the provisions of this Agreement, with a copy of such notice delivered promptly to Employer in accordance with Section 6.

4. **Extension of Non-Competition Periof in the Event of Breach.** It is agreed that the Restricted Period shall be extended by an amount of time equal to the amount of time during which Employee is in breach of any of the restrictive covenants set forth above

5. **Judicial Reformation to Render Agreement Enforceable.** If it is determined by a court of competent jurisdiction that any of the restrictions or language in this Agreement are for any reason Invalid or unenforceable, the parties desire and agree that the court revise any such restrictions or language, including reducing any time or geographic area, so as to render them valid and enforceable to the fullest extent allowed by law. If any restriction or language in this Agreement is for any reason invalid or unenforceable and cannot by law be revised so as to render it valid and enforceable, then the parties desire and agree that the court strike only the invalid and unenforceable language and enforce the balance of this Agreement to the fullest extent allowed by law. Employer and Employee agree that the invalidity or unenforceabllity of any provision of this Agreement shall not affect the remainder of this Agreement.

6. **Notice.** All documents, notices or other communications that are required or permitted to be delivered or given under this Agreement shall be in writing and shall be deemed to be duly delivered or given when received.

If to Employer: First Solar, Inc.
350 West Washington Street
Suite 600
Tempe, AZ 85281
Attention: Corporate Secretary

If to Employee: To Employee's then current address on file with Employer

7. **Enforcement.** Except as expressly stated herein, the covenants contained in this Agreement shall be construed as independent of any other provision or covenants of any other agreement between Employer and Employee, and the existence of any claim or cause of action of Employee against Employer, whether predicated on this Agreement or otherwise, or the actions of Employer with respect to enforcement of similar restrictions as to other employees, shall not constitute a defense to the enforcement by Employer of such covenants. Employee acknowledges and agrees that Employer has invested great time, effort and expense in its business and reputation, that the products and Information of Employer are unique and valuable, and that the services performed by Employee are unique and extraordinary, and Employee agrees that Employer will suffer immediate, Irreparable harm and shall been titled, upon a breach or a threatened breach of this Agreement, to emergency, preliminary, and permanent injunctive relief against such activities, without having to post any bond or other security, and in addition to any other remedies available to Employer at law or equity. Any specific right or remedy set forth in this Agreement, legal, equitable or otherwise, shall not be exclusive but shall be cumulative upon all other rights and remedies allowed or by law, including the recovery of money damages. The failure of Employer to enforce any of the provisions of this Agreement, or the provisions of any agreement with any other Employee, shall not constitute a waiver or limit any of Employer's rights.

8. **At-Will Employment Termination.** This Agreement does not alter the at-will nature of Employee's employment by Employer, and Employee's employment may be terminated by either party, with or without notice and with or without cause, at any time. In addition to the foregoing provisions of this Agreement, upon Employee's termination, Employee shall cease all identification of Employee with Employer and/or the business, products or services of Employer, and the use of Employer's name, trademarks, trade name or fictitious name. All provisions, obligations, and restrictions in this Agreement shall survive termination of Employee's employment with Employer.

9. **Choice of Law. Choice of Forum. Unless otherwise required by applicable law,** this Agreement shall be governed by and construed and enforced in accordance with the laws of the State of Arizona, without reference to the principles of conflicts of laws. Any judicial action commenced relating in any way to this Agreement including the enforcement, interpretation,or performance of this Agreement, shall be commenced and maintained in a court of competent jurisdiction located in Phoenix, Arizona. tn any action to enforce this Agreement, the prevailing party shall be entitled to recover its litigation costs, including its attorneys' fees. The partieshereby waive and relinquish any right to a jury trial and agree that any dispute shall be heard and resolved by a court and without a jury. The parties further agree that the dispute resolution, including any discovery, shall be accelerated and expedited to the extent possible. Each party's agreements in this Section 9 are made in consideration of the other party's agreements in this Section 9, as well as in other portions of this Agreement.

10. **Entire Agreement, Modification and Assignment.**

10.1. This Agreement, the Employment Agreement, the Confidentiality Agreement, and the Change in Control Agreement, comprise the entire agreement relating to the subject matter hereof between the parties and supersede, cancel, and annul any and all prior agreements or understandings between the parties concerning the subject matter of the Agreement.

10.2. This Agreement may not be modified orally but may only be modified in a writing executed by both Employer and Employee.

10.3. This Agreement shall inure to the benefit of the Employer, its successors and assigns, and may be assigned by Employer. Employee's rights and obligations under this Agreement may not be assigned by Employee.

11. **Construction.** As used in this Agreement, words such as "herein," "hereinafter," "hereby," and "hereunder," and the words of like import refer to this Agreement, unless the context requires otherwise. The words "include," "includes," and "including" shall be deemed to be followed by the phrase "without limitation."

IN WITNESS WHEREOF, the parties have executed this Agreement, effective as of the day and year first written above.

EMPLOYER: **EMPLOYEE:**

First Solar, Inc.

By: /s/ Mark Widmar /s/ Caroline Stockdale

Its: Printed Name: Caroline Stockdale

Printed Name:

EXHIBIT 10.43

Form RSU-010

RESTRICTED STOCK UNIT AWARD AGREEMENT under the FIRST SOLAR, INC. 2015 OMNIBUS INCENTIVE COMPENSATION PLAN, between First Solar, Inc. (the "Company"), a Delaware corporation, and the individual (the "Participant") set forth on the Grant Notice which incorporates this Form RSU-010 by reference.

This Restricted Stock Unit Award Agreement including any addendum hereto and the Grant Notice (collectively, this "Award Agreement") set forth the terms and conditions of an award of Restricted Stock Units (this "Award") that is being granted to the Participant set forth on the Grant Notice on the date set forth in the Grant Notice (such date, the "Grant Date"), under the terms of the First Solar, Inc. 2015 Omnibus Incentive Compensation Plan (the "Plan") for the number of restricted stock units (each such restricted stock unit, an "RSU") set forth in the Grant Notice. Each RSU constitutes an unfunded and unsecured promise of the Company to deliver (or cause to be delivered) to the Participant one share of the common stock of the Company (a "Share"), subject to the all terms and conditions of this Award Agreement and the Plan, including without limitation, THE DISPUTE RESOLUTION PROVISIONS SET FORTH IN SECTION 15 OF THIS AWARD AGREEMENT.

* * *

SECTION 1. **The Plan**. This Award is made pursuant to the Plan, all the terms of which are hereby incorporated in this Award Agreement. In the event of any conflict between the terms of the Plan, on the one hand, and the terms of this Award Agreement, on the other hand, the terms of the Plan shall govern.

SECTION 2. **Definitions**. The following terms are defined in this Award Agreement, and shall when capitalized have the meaning ascribed to them in this Award Agreement in the locations set forth below.

Defined Term	Cross-Ref.	Defined Term	Cross-Ref.
"Addendum"	Section 19	"Grant Date"	Paragraph 2
"Affiliate"	Section 3(a)	"Participant"	Paragraph 1
"Award"	Paragraph 2	"Plan"	Paragraph 2
"Award Agreement"	Paragraph 2	"RSU"	Paragraph 2
"Business Day"	Section 16	"Share"	Paragraph 2
"Company"	Paragraph 1	"Tax-Related Items"	Section 7
"Employer"	Section 7	"Vesting Date"	Section 3(a)

Capitalized terms that are not defined in this Award Agreement shall have the meanings used or defined in the Plan.

SECTION 3. **Vesting and Delivery of Shares**

(a) Vesting. Except as otherwise determined by the Committee in its sole discretion, the Participant shall vest in the number of RSUs that corresponds to the vesting date(s) set forth in the Grant Notice (each, a "Vesting Date"); provided that the Participant is actively employed by the Company or an Affiliate on the relevant Vesting Date. For

purposes of this Award Agreement, an "Affiliate" of the Company is an individual or entity that directly, or indirectly through one or more intermediaries, controls, or is controlled by, or is under common control with, the Company.

(b) Delivery of Shares. On or shortly following, but in no event later than 30 days after, each Vesting Date, the Company shall deliver to the Participant one Share for each RSU that vests on such date.

SECTION 4. Forfeiture of RSUs. Unless the Committee determines otherwise, or unless otherwise provided in the Grant Notice, a written agreement between the Company and the Participant or any other plan, policy or program of the Company then in effect, if the Participant's rights with respect to any RSUs awarded pursuant to this Award Agreement do not vest prior to the date on which the Participant's employment or service relationship with the Company and/or its Affiliates terminates for any reason, the Participant's rights with respect to such RSUs shall immediately terminate, and the Participant will not be entitled to receive any Shares or any other payments or benefits with respect thereto (as further described in Section 9(l) below).

SECTION 5. Voting Rights; Dividend Equivalents. The Participant shall not be entitled to exercise any voting rights with respect to an RSU and shall not be entitled to receive dividends, dividend equivalents or other distributions with respect to the Shares underlying such RSU prior to the date on which the Participant's rights with respect to the RSU have become vested and Shares are delivered to the Participant.

SECTION 6. Non-Transferability of RSUs. Unless otherwise provided by the Committee in its discretion, RSUs may not be sold, assigned, alienated, transferred, pledged, attached or otherwise encumbered by the Participant. Any purported sale, assignment, alienation, transfer, pledge, attachment or other encumbrance of an RSU in violation of the provisions of this Section 6 shall be void.

SECTION 7. Responsibility for Taxes.

(a) Regardless of any action the Company or the Participant's employer, if other than the Company (the "Employer"), takes with respect to any or all federal, state or local income tax, social security contributions, payroll tax, payment on account or other tax-related items related to the Participant's participation in the Plan that are legally applicable to the Participant ("Tax-Related Items"), the Participant acknowledges that the ultimate liability for all Tax-Related Items is and remains the Participant's responsibility and that such liability may exceed the amount actually withheld, if any, by the Company or the Employer. The Participant further acknowledges that the Company and/or the Employer (1) make no representations or undertakings regarding the treatment of any Tax-Related Items in connection with any aspect of the RSUs, including, without limitation, the grant, vesting or settlement of the RSUs, the issuance of Shares on the relevant Vesting Date, the subsequent sale of Shares acquired pursuant to such issuance and the receipt of any dividends; and (2) do not commit to and are under no obligation to structure the terms of the Award or any aspect of the RSUs to reduce or eliminate the Participant's liability for Tax-Related Items or achieve any particular tax result. Further, if the Participant becomes subject to tax and/or social security contributions in more than one jurisdiction, the Participant acknowledges that the Company and/or the Employer (or former employer, as applicable) may be required to withhold or account for Tax-Related Items in more than one jurisdiction.

(b) Prior to any relevant taxable, tax and/or social security contribution withholding event, the Participant shall pay or make adequate arrangements satisfactory to the Company and/or the Employer to satisfy all Tax-Related Items. In this regard, the Participant authorizes the Company or its agent to satisfy any applicable withholding obligations with regards to Tax-Related Items by withholding a number of Shares to be issued upon settlement of the RSUs. If, for any reason, the Shares that would otherwise be deliverable to the Participant upon settlement of the RSUs would be insufficient to satisfy the tax withholding obligations, or if such withholding in Shares is problematic under applicable tax or securities law or has materially adverse accounting consequences, the Participant authorizes (i) the Company and any brokerage firm determined acceptable to the Company to sell on the Participant's behalf a whole number of Shares from those Shares to be issued to the Participant as the Company determines to be appropriate to generate cash proceeds sufficient to satisfy any applicable withholding obligations for Tax-Related Items and (ii) the Company, the Employer and any Affiliate to withhold an amount from the Participant's wages or other compensation or require the

Participant to make a cash payment sufficient to fully satisfy any applicable withholding obligations for Tax-Related Items.

(c) Depending on the withholding method, the Company may withhold or account for Tax-Related Items by considering applicable minimum statutory withholding amounts or other applicable withholding rates, including maximum rates, in which case the Participant will receive a refund of any over-withheld amount in cash and will have no entitlement to the equivalent in Shares. If the obligation for Tax-Related Items is satisfied by withholding in Shares, the Participant is deemed, for tax and/or social security contributions and other purposes, to have been issued the full number of Shares subject to the vested RSUs, notwithstanding that a number of Shares are held back solely for the purposes of paying the Tax-Related Items due as a result of any aspect of the Participant's participation in the Plan.

(d) The Participant shall pay to the Company or the Employer any amount of Tax-Related Items that the Company or the Employer may be required to withhold or account for as a result of the Participant's participation in the Plan that cannot be satisfied by the means previously described. The Participant expressly acknowledges that the delivery of Shares pursuant to Section 3(b) above is conditioned on satisfaction of all Tax-Related Items in accordance with this Section 7, and that the Company may refuse to deliver the Shares if the Participant fails to comply with the Participant's obligations in connection with the Tax-Related Items.

SECTION 8. Consents and Legends.

(a) Consents. The Participant's rights in respect of the RSUs are conditioned on the receipt to the full satisfaction of the Committee of any required consents that the Committee may determine to be necessary or advisable (including, without limitation, the Participant's consent to the Company's supplying to any third-party recordkeeper of the Plan such personal information as the Committee deems advisable to administer the Plan, as may further be described to the extent applicable discussing applicable data privacy considerations in an addendum to this Award Agreement, as described in Section 19).

(b) Legends. The Company may affix to certificates for Shares issued pursuant to this Award Agreement any legend that the Committee determines to be necessary or advisable (including to reflect any restrictions to which the Participant may be subject under any applicable securities laws). The Company may advise the applicable transfer agent to place a stop order against any legended Shares.

SECTION 9. Nature of Award. As a condition to receipt of this Award, the Participant acknowledges, understands and agrees that:

(a) the Plan is established voluntarily by the Company, is discretionary in nature and may be modified, amended, suspended or terminated by the Company at any time, unless otherwise provided in the Plan and this Award Agreement;

(b) this Award is exceptional, voluntary and occasional and does not create any contractual or other right to receive future awards of RSUs, or benefits in lieu of RSUs, even if RSUs have been granted repeatedly in the past;

(c) all decisions with respect to future awards of RSUs, if any, will be at the sole discretion of the Company;

(d) the Participant's participation in the Plan shall not create a right to further employment with the Employer and shall not interfere with the ability of the Employer to terminate the Participant's employment relationship at any time;

(e) the Participant's participation in the Plan is voluntary;

(f) the RSUs and the Shares subject to the RSUs are extraordinary items that do not constitute compensation of any kind for services of any kind rendered to the Company or the Employer, and which are outside the scope of the Participant's employment agreement, if any, unless such agreement is directly with the Company and specifically provides to the contrary;

(g) the RSUs and the Shares subject to the RSUs, and the income from and value of same, are not intended to replace any pension rights or compensation;

(h) the RSUs and the Shares subject to the RSUs, and the income from and value of same, are not part of normal or expected compensation or salary for any purposes, including, without limitation, calculating any severance, resignation, termination, redundancy, dismissal, end-of-service payments, bonuses, long-service awards, holiday pay, pension or retirement or welfare benefits or similar payments and in no event should be considered as compensation for, or relating in any way to, past services for the Company, the Employer, or any Affiliate;

(i) this Award and the Participant's participation in the Plan will not be interpreted to form or amend an employment or service agreement or relationship with the Company or any Affiliate;

(j) the future value of the underlying Shares is unknown and cannot be predicted with certainty;

(k) no claim or entitlement to compensation or damages shall arise from forfeiture of the RSUs resulting from termination of the Participant's employment or other service relationship by the Company or the Employer (for any reason whatsoever, whether or not later found to be invalid or in breach of employment laws in the jurisdiction where Participant is employed or the terms of Participant's employment agreement, if any);

(l) except as otherwise provided by the Committee or the Grant Notice, in the event of termination of the Participant's employment or service relationship, the Participant's right to vest in the RSUs under the Plan, if any, will terminate effective as of the date the Participant is no longer actively providing services to the Company, the Employer or any Affiliate of the Company (regardless of the reason for such termination and whether or not later found to be invalid or in breach of employment laws in the jurisdiction where the Participant is employed or the terms of the Participant's employment agreement, if any), and unless otherwise expressly provided in this Award Agreement or determined by the Company, the Participant's right to vest in the RSU under the Plan, if any, will terminate as of such date and will not be extended by any notice period (e.g., the Participant's period of service would not include any contractual notice period or any period of "garden leave" or similar period mandated under employment laws in the jurisdiction where the Participant is employed or the terms of the Participant's employment agreement, if any); the Committee shall have the exclusive discretion to determine when the Participant is no longer actively providing services for purposes of the RSUs (including whether the Participant may still be considered to be providing services while on a leave of absence);

(m) unless otherwise agreed with the Company, the RSUs and Shares subject to the RSUs, and the income from and value of same, are not granted as consideration for, or in connection with, the service Participant may provide as a director of an Affiliate;

(n) the RSUs and the benefits under the Plan, if any, will not automatically transfer to a successor company in the case of a Change of Control or a merger, takeover, or transfer of liability of the Employer; and

(o) neither the Company nor the Employer or any Affiliate shall be liable for any foreign exchange rate fluctuation between the Participant's local currency and the United States Dollar that may affect the value of the Award or of any amounts due to the Participant for the settlement of the RSUs or the subsequent sale of any Shares acquired upon settlement.

SECTION 10. **No Advice Regarding Grant**. Nothing in this Award Agreement should be viewed as the provision by the Company of any tax, legal, or financial advice, nor is the Company making any recommendations

regarding the Participant's participation in the Plan, or the Participant's acquisition or sale of the underlying Shares. The Participant understands and agrees that the Participant should consult with the Participant's own personal tax, legal and financial advisors regarding the Participant's participation in the Plan before taking any action in relation thereto.

SECTION 11. **Adjustments**. In the event of any change in the outstanding Shares by reason of any stock split, stock dividend, split-up, split-off, spin-off, recapitalization, merger, consolidation, rights offering, reorganization, combination or exchange of shares, sale by the Company of all or part of its assets, distribution to shareholders other than a normal cash dividend, or other extraordinary or unusual event occurring after the Grant Date and prior to the end of the vesting period, that affects the value of the RSUs or Shares, the number, class and kind of the securities subject to the RSUs, or the number of RSUs, as appropriate, shall be adjusted by the Committee to reflect the occurrence of such event.

SECTION 12. **Electronic Delivery**. The Company may, in its sole discretion, decide to deliver any documents related to current or future participation in the Plan by electronic means. Receipt of this Award is conditioned upon the Participant's consent to such electronic delivery and the Participant's agreement to participate in the Plan through an online or electronic system established and maintained by the Company or a third party designated by the Company.

SECTION 13. **Successors and Assigns of the Company**. The terms and conditions of this Award Agreement shall be binding upon and shall inure to the benefit of the Company and its successors and assigns.

SECTION 14. **Committee Discretion**. The Committee shall have full and plenary discretion with respect to any actions to be taken or determinations to be made in connection with this Award Agreement, and its determinations shall be final, binding and conclusive.

SECTION 15. **Dispute Resolution**.

(a) Jurisdiction and Venue. Notwithstanding any provision in any employment agreement between the Participant and the Company or any Affiliate, the Participant and the Company hereby irrevocably submit to the exclusive jurisdiction of (i) the United States District Court for the District of Delaware and (ii) the courts of the State of Delaware for the purposes of any action, suit or other proceeding arising out of this Award Agreement or the Plan. The Participant and the Company agree to commence any such action, suit or proceeding either in the United States District Court for the District of Delaware or, if such action, suit or other proceeding may not be brought in such court for jurisdictional reasons, in the courts of the State of Delaware. The Participant and the Company further agree that service of any process, summons, notice or document by U.S. registered mail (or its equivalent in the Participant's country of residence) to the applicable address set forth in Section 16 below shall be effective service of process for any action, suit or proceeding in Delaware with respect to any matters to which the Participant has submitted to jurisdiction in this Section 15(a). The Participant and the Company irrevocably and unconditionally waive any objection to the laying of venue of any action, suit or proceeding arising out of this Award Agreement or the Plan in (A) the United States District Court for the District of Delaware, or (B) the courts of the State of Delaware, and hereby and thereby further irrevocably and unconditionally waive and agree not to plead or claim in any such court that any such action, suit or proceeding brought in any such court has been brought in an inconvenient forum.

(b) Waiver of Jury Trial. Notwithstanding any provision in the Participant's employment agreement, if any, between the Participant and the Company, the Participant and the Company hereby waive, to the fullest extent permitted by applicable law, any right either may have to a trial by jury in respect to any litigation directly or indirectly arising out of, under or in connection with this Award Agreement or the Plan.

(c) Confidentiality. The Participant hereby agrees to keep confidential the existence of, and any information concerning, a dispute described in this Section 15, except that the Participant may disclose information concerning such dispute to the court that is considering such dispute or to the Participant's legal counsel (provided that

such counsel agrees not to disclose any such information other than as necessary to the prosecution or defense of the dispute).

SECTION 16. **Notice**. All notices, requests, demands and other communications required or permitted to be given under the terms of this Award Agreement shall be in writing and shall be deemed to have been duly given when delivered by hand or overnight courier or three Business Days after they have been mailed by U.S. registered mail (or its equivalent in the Participant's country of residence), return receipt requested, postage prepaid, addressed to the other party as set forth below:

If to the Company:	First Solar, Inc. 350 W Washington Street, Suite 600 Tempe, AZ 85281 Attention: Stock Plan Administrator
If to the Participant:	To the address most recently supplied to the Company and set forth in the Company's records

The parties may change the address to which notices under this Award Agreement shall be sent by providing written notice to the other in the manner specified above. For this purpose, "Business Day" means a day that is not a Saturday, a Sunday or a day on which banking institutions are legally permitted to be closed in Phoenix, Arizona, U.S.

SECTION 17. **Governing Law**. This Award Agreement shall be deemed to be made in the State of Delaware, and the validity, construction and effect of this Award Agreement in all respects shall be determined in accordance with the laws of the State of Delaware, without giving effect to the conflict of law principles thereof.

SECTION 18. **Headings**. Headings are given to the Sections and subsections of this Award Agreement solely as a convenience to facilitate reference. Such headings shall not be deemed in any way material or relevant to the construction or interpretation of this Award Agreement or any provision thereof.

SECTION 19. **Country-Specific or Other Addenda**.

(a) Notwithstanding any provisions in this Award Agreement or the Plan, this Award shall be subject to such special terms and conditions set forth in any Addendum attached hereto ("Addendum") or as may later become applicable, as described herein.

(b) If the Participant becomes subject to the laws of a jurisdiction to which an Addendum applies, the special terms and conditions for such jurisdiction will apply to this Award to the extent the Committee determines that the application of such terms and conditions is necessary or advisable to comply with local laws or to facilitate the administration of the Plan; provided the imposition of the term or condition will not result in any adverse accounting expense with respect to the Award.

(c) Any Addendum attached hereto shall be considered a part of this Award Agreement.

SECTION 20. **Severability**. The provisions of this Award Agreement are severable, and, if any one or more provisions are determined to be illegal or otherwise unenforceable, in whole or in part, the remaining provisions nevertheless shall be binding and enforceable.

SECTION 21. **Amendment of this Award Agreement**. The Committee may waive any conditions or rights under, amend any terms of, or alter, suspend, discontinue, cancel or terminate this Award Agreement prospectively or retroactively; provided, however, that any such waiver, amendment, alteration, suspension, discontinuance, cancellation or termination that would materially and adversely impair the Participant's rights under this Award

Agreement shall not, to the extent of such impairment, be effective without the Participant's consent (it being understood, notwithstanding the foregoing proviso, that this Award Agreement and the RSUs shall be subject to the provisions of Section 7(c) of the Plan).

SECTION 22. **Imposition of Other Requirements**. The Company reserves the right to impose other requirements on the Participant's participation in the Plan, on the RSUs and on any Shares acquired under this Award, to the extent that the Company determines it is necessary or advisable to comply with local law or facilitate the administration of the Plan, and to require the Participant to sign any additional agreements or undertakings that may be necessary to accomplish the foregoing.

SECTION 23. **Acceptance of Terms and Conditions for RSUs**. As a condition to receipt of this Award, the Participant confirms that he/she has read and understood the documents relating to this Award (i.e., the Plan, this Award Agreement, including any Addendum) and accepts the terms of those documents accordingly.

SECTION 24. **Counterparts**. Where signature of this Award Agreement is contemplated in the Grant Notice or any Addendum, this Award Agreement may be signed in counterparts, with the same effect as if the signatures thereto and hereto were upon the same instrument.

SECTION 25. **Code Section 409A**. The vesting and settlement of RSUs awarded pursuant to this Award Agreement are intended to qualify for the "short-term deferral" exemption from Section 409A of the Code, and the provisions of this Award Agreement will be interpreted, operated, and administered in a manner consistent with these intentions. Anything to the contrary in the Plan or this Award Agreement requiring the consent of the Participant notwithstanding, the Company reserves the right, to the extent the Company deems necessary or advisable in its sole discretion, to unilaterally amend or modify the Plan and/or this Award Agreement to ensure that the RSUs qualify for exemption from or comply with Section 409A of the Code; provided, however, that the Company makes no representations that the RSUs will be exempt from or comply with Section 409A of the Code, and makes no undertaking to preclude Section 409A of the Code from applying to the RSUs, and the Company will have no liability to the Participant or any other party if a payment under this Award Agreement that is intended to be exempt from, or compliant with, Section 409A of the Code is not so exempt or compliant or for any action taken by the Committee with respect thereto.

SECTION 26. **Waiver**. The Participant acknowledges that a waiver by the Company of breach of any provision of the Award Agreement shall not operate or be considered as a waiver of any other provision of the Award Agreement, or of any subsequent breach by the Participant or any other participant.

SECTION 27. **Insider Trading Restrictions/Market Abuse Laws**. The Participant acknowledges that he or she may be subject to insider trading restrictions and/or market abuse laws based on the exchange on which the Shares are listed and in applicable jurisdictions, including the United States, the Participant's country and the designated broker's country, that may affect his or her ability to accept, acquire, sell or otherwise dispose of Shares, rights to Shares (*e.g.*, RSUs) or rights linked to the value of Shares under the Plan during such times as the Participant is considered to have "inside information" regarding the Company (as defined by the laws in applicable jurisdictions). Local insider trading laws and regulations may prohibit the cancellation or amendment of orders the Participant placed before the Participant possessed inside information. Furthermore, the Participant could be prohibited from (i) disclosing the inside information to any third party, which may include fellow employees and (ii) "tipping" third parties or causing them otherwise to buy or sell securities. Any restrictions under these laws or regulations are separate from and in addition to any restrictions that may be imposed under any applicable Company insider trading policy. The Participant acknowledges that it is his or her responsibility to comply with any applicable restrictions, and the Participant should consult his or her personal advisor on this matter.

SECTION 28. **Foreign Asset/Account, Exchange Control and Tax Reporting**. The Participant acknowledges that the Participant may be subject to foreign asset/account, exchange control and/or tax reporting requirements as a result of the acquisition, holding and/or transfer of Shares or cash (including dividends and the

proceeds arising from the sale of Shares) derived from his or her participation in the Plan in, to and/or from a brokerage/bank account or legal entity located outside the Participant's country. The applicable laws of the Participant's country may require that the Participant report such accounts, assets, the balances therein, the value thereof and/or the transactions related thereto to the applicable authorities in such country. The Participant acknowledges that he or she is responsible for ensuring compliance with any applicable foreign asset/account, exchange control and tax reporting requirements and should consult his or her personal legal advisor on this matter.

SECTION 29. **Entire Agreement**. This Award Agreement (including any addenda), the Grant Notice and the Plan contain the entire agreement and understanding of the parties hereto with respect to the subject matter contained herein and supersede all prior communications, representations and negotiations in respect thereto.

ADDENDUM
ADDITIONAL TERMS AND CONDITIONS APPLICABLE TO
AWARD AGREEMENT (RSU-010)

TERMS AND CONDITIONS

This Addendum, which is part of the Award Agreement, includes additional terms and conditions that govern the Award and that will apply to the Participant if he or she resides in one of the countries listed below. Capitalized terms that are not defined in this Addendum shall have the meanings used or defined in the Award Agreement or the Plan.

NOTIFICATIONS

This Addendum also includes information regarding securities, exchange control and certain other issues of which the Participant should be aware with respect to his or her participation in the Plan. The information is based on the securities, exchange control and other laws in effect in the countries set forth below as of August 2019. Such laws are often complex and change frequently. As a result, the Participant should not rely solely on this Addendum for information relating to the consequences of participating in the Plan because such information may be outdated when the Participant's RSUs vest and/or the Participant sells any Shares acquired on a Vesting Date.

In addition, the information set forth in this Addendum is general in nature and may not apply to the Participant's particular situation. As a result, the Company is not in a position to assure the Participant of any particular result. The Participant therefore should seek appropriate professional advice as to the application of relevant laws in the Participant's country to the Participant's particular situation.

Finally, if the Participant is a citizen or resident of a country other than the one in which he or she currently is working, or transfers to a different country after the Grant Date, the information set forth in this Addendum may not apply to the Participant.

ALL COUNTRIES OUTSIDE THE U.S.

Data Privacy Consent. Notice. The purpose of this Notice is to inform the Participant about how the Company processes the Participant's personal data ("Personal Data") in connection with the Plan and the Award Agreement. The Company is the controller of the Participant's Personal Data.

(a) *Data Processing and Legal Basis. The Company collects, uses and otherwise processes Personal Data about the Participant for the Company's legitimate business interests for the purposes of allocating Shares and implementing, administering and managing the Plan and/or for the purposes of performing a contract between the Company and the Participant. The Personal Data processed by the Company may include, without limitation, the Participant's name, home address and telephone number, email address, date of birth, social insurance number, passport number or other identification number (e.g., resident registration number), salary, nationality, job title, any shares of stock or directorships held in the Company or its Affiliates, details of all Awards or any other entitlement to shares of stock or equivalent benefits awarded, canceled, exercised, vested, unvested or outstanding in the Participant's favor of implementing, administering and managing the Plan.*

(b) *Stock Plan Administration Service Providers. The Company may transfer the Participant's Personal Data, or parts thereof, to (i) E*Trade Financial (and its affiliated companies), an independent service provider based in the United States which assists the Company with the implementation, administration and management of the Plan and (ii) My Equity Comp (and its affiliated companies), an independent service provider based in the United States which assists the Company with the preparation of tax forms and tax returns. In the future, the Company may select different service providers and share the Participant's Personal Data with such different service providers that serves the Company in a similar manner. The Company's service providers will open an account for the Participant to receive and trade Shares acquired under the Plan and that the Participant will be asked to agree on separate terms and data*

processing practices with the service provider, which is a condition of the Participant's ability to participate in the Plan. In addition to the foregoing service providers, the Company may transfer portions of the Participant's Personal Data related to the Participant's stock holdings to competent public authorities in connection with statutory audit reports and/or where required by law.

(c) *International Data Transfers. The Company and, as of the date hereof, any third parties assisting in the implementation, administration and management of the Plan, such as E*Trade Financial, are based in the United States. If the Participant is located outside the United States, the Participant's country may have enacted data privacy laws that are different from the laws of the United States. Where it is necessary to transfer the Participant's Personal Data to a different country to where the Participant is based, the Company has implemented appropriate safeguards to protect the Participant's Personal Data, including the execution of data transfer agreements with the recipient of the information. For further information, or a copy of, the adequate safeguards adopted by the Company, the Participant should contact the Participant's local human resources representative. The Company shall process any request in line with applicable law and the Company policy and procedures.*

(d) *Data Retention. The Company will process the Participant's Personal Data only as long as is necessary to implement, administer and manage the Participant's participation in the Plan, or to comply with legal or regulatory obligations, including under tax and securities laws. In the latter case, the Participant understands and acknowledges that the Company's legal basis for the processing of the Participant's Personal Data would be compliance with the relevant laws or regulations. When the Company no longer needs the Participant's Personal Data for any of the above purposes, the Participant understands the Company will remove it from its systems.*

(e) *Data Subject Rights. The Data subject rights regarding the processing of personal data vary depending on the applicable law and that, depending on where the Participant is based and subject to the conditions set out in the applicable law, the Participant may have, without limitation, the rights to (i) inquire whether and what kind of Personal Data the Company holds about the Participant and how it is processed, and to access or request copies of such Personal Data, (ii) request the correction or supplementation of Personal Data about the Participant that is inaccurate, incomplete or out- of-date in light of the purposes underlying the processing, (iii) obtain the erasure of Personal Data no longer necessary for the purposes underlying the processing, processed based on withdrawn consent, processed for legitimate interests that, in the context of the Participant's objection, do not prove to be compelling, or processed in non-compliance with applicable legal requirements, (iv) request the Company to restrict the processing of the Participant's Personal Data in certain situations where the Participant feels its processing is inappropriate, (v) object, in certain circumstances, to the processing of Personal Data for legitimate interests, and to (vi)request portability of the Participant's Personal Data that the Participant has actively or passively provided to the Company (which does not include data derived or inferred from the collected data), where the processing of such Personal Data is based on consent or the Participant's employment and is carried out by automated means. In case of concerns, the Participant may also have the right to lodge a complaint with the competent local data protection authority. Further, to receive clarification of, or to exercise any of, the Participant's rights the Participant should contact the Participant's local human resources representative.*

Language. The Participant acknowledges that he or she is proficient in the English language, or has consulted with an advisor who is sufficiently proficient in English, so as to allow the Participant to understand the terms and conditions of this Award Agreement. If the Participant receives the Award Agreement or any other document related to the Plan translated into a language other than English and if the meaning of the translated version is different than the English version, the English version will control.

AUSTRALIA

TERMS AND CONDITIONS

Australian Offer Document. The Participant's right to participate in the Plan, vest in the RSUs, and receive the Shares underlying the RSUs granted under the Plan is subject to the terms and conditions stated in the Plan, the Australian

Offer Document, the Award Agreement and this Addendum, all of which are intended to comply with the provisions of the Australian Corporations Act 2001, ASIC Regulatory Guide 49 and ASIC Class Order CO 14/1000.

RSUs Payable in Shares Only. Notwithstanding any discretion in the Plan, due to securities law considerations in Australia, the RSUs will be settled in Shares only. The RSUs do not provide any right for the Participant to receive a cash payment.

Tax Information. The Plan is a plan to which Subdivision 83A-C of the Income Tax Assessment Act 1997 (Cth) applies (subject to conditions in the Act).

NOTIFICATIONS

Exchange Control Notification. Exchange control reporting is required for cash transactions exceeding A$10,000 and international fund transfers. If there is an Australian bank assisting with the transaction, the Australian bank will file the report for the Participant. If there is no Australian bank involved in the transaction, the Participant must file the report.

BELGIUM

NOTIFICATIONS

Tax Reporting Notification. The Participant must report any taxable income attributable to the RSUs on the Participant's annual tax return.

Foreign Asset/Account Reporting Notification. The Participant must report securities held (including Shares) or any bank or brokerage accounts opened and maintained outside Belgium on the Participant's annual tax return. In a separate report, the Participant is required to report to the National Bank of Belgium the details of such accounts opened and maintained outside Belgium. This report, as well as additional information on how to complete it, can be found on the website of the National Bank of Belgium, www.nbb.be, under the Kredietcentrales / Centrales des crédits caption.

Stock Exchange Tax. A stock exchange tax applies to transactions executed by a Belgian resident through a non-Belgian financial intermediary, such as a U.S. broker. The stock exchange tax will likely apply when Shares acquired upon vesting of the RSUs are sold. The Participant should consult with his or her personal tax advisor for additional details on his or her obligations with respect to the stock exchange tax.

Brokerage Account Tax. A brokerage account tax applies to Belgian residents if the average annual value of securities (including Shares) held in a brokerage account exceeds certain thresholds. Belgian residents should consult with a personal tax or financial advisor for additional details on their obligations with respect to the brokerage account tax.

BRAZIL

TERMS AND CONDITIONS

Compliance with Law. By accepting the Award, the Participant agrees to comply with applicable Brazilian laws and pay any and all applicable taxes associated with the issuance of Shares upon vesting of the RSUs, the subsequent sale of Shares issued in settlement of the RSUs, and the receipt of any dividends.

Labor Law Acknowledgment. By accepting the Award, the Participant agrees that (i) he or she is making an investment decision, (ii) the Shares will be issued to the Participant only if the vesting conditions are met, and (iii) the value of the underlying Shares is not fixed and may increase or decrease in value over the vesting period without compensation to the Participant.

NOTIFICATIONS

Foreign Asset/Account Reporting Notification. If the Participant holds assets and rights outside Brazil with an aggregate value exceeding US$100,000, the Participant will be required to prepare and submit to the Central Bank of Brazil an annual declaration of such assets and rights, including: (i) bank deposits; (ii) loans; (iii) financing transactions; (iv) leases; (v) direct investments; (vi) portfolio investments, including Shares acquired under the Plan; (vii) financial derivatives investments; and (viii) other investments, including real estate and other assets. In addition, if the Participant holds such assets and rights outside Brazil with an aggregate value exceeding US$100,000,000, then quarterly reporting to the Central Bank of Brazil is required.

Please note that foreign individuals holding Brazilian visas are considered Brazilian residents for purposes of this reporting requirement and must declare at least the assets held abroad that were acquired subsequent to the date of admittance as a resident of Brazil. Individuals holding assets and rights outside Brazil valued at less than US$100,000 are not required to submit a declaration. Please note that the US$100,000 threshold may be changed annually.

Tax on Financial Transaction ("IOF"). Cross-border financial transactions relating to RSUs may be subject to the IOF (tax on financial transactions). The Participant should consult with his or her personal tax advisor for additional details.

CANADA

TERMS AND CONDITIONS

RSUs Payable in Shares Only. Notwithstanding any discretion in the Plan, due to securities law considerations in Canada, the RSUs will be settled in Shares only. The RSUs do not provide any right for the Participant to receive a cash payment.

Termination of Employment. The following provision replaces Section 9(l) of the Award Agreement:

Except as otherwise provided by the Committee or the Grant Notice, in the event of termination of the Participant's employment (regardless of the reason for such termination and whether or not later found invalid or in breach of employment laws in the jurisdiction where the Participant is employed or the terms of the Participant's employment agreement, if any), the Participant's right to vest in the RSUs under the Plan, if any, will terminate effective as of the date that is the earlier of (i) the date on which the Participant's employment is terminated by the Company or the Employer, (ii) the date on which the Participant receives a notice of termination of employment from the Company or the Employer, or (iii) the date on which the Participant is no longer providing active services to the Company or Employer, regardless of any notice period or period of pay in lieu of such notice required under local law; the Committee shall have the exclusive discretion to determine when the Participant is no longer employed for purposes of the RSUs (including whether the Participant may still be considered to be providing services while on a leave of absence).

The following terms and conditions apply if the Participant is in Quebec:

Authorization to Release and Transfer Necessary Personal Information. The following provision supplements the "Data Privacy Consent" provision set forth above in this Addendum:

The Participant hereby authorizes the Company and the Company's representatives to discuss with and obtain all relevant information from all personnel, professional or not, involved in the administration and operation of the Plan. The Participant further authorizes the Company and/or any Affiliate to disclose and discuss the Plan with their advisors. The Participant further authorizes the Company and any Affiliate to record and keep such information in the Participant's employment file.

French Language Acknowledgment. The following provision supplements the "Language" provision set forth above in this Addendum:

The parties acknowledge that it is their express wish that this Award Agreement, as well as all documents, notices and legal proceedings entered into, given or instituted pursuant hereto or relating directly or directly hereto, be drawn up in English.

Les parties reconnaissent avoir exigé la rédaction en anglais de cette convention, ainsi que de tous documents, avis et procédures judiciaires, exécutés, donnés ou intentés en vertu de, ou liés directement ou indirectement à, la présente convention.

NOTIFICATIONS

Securities Law Notification. The Participant will not be permitted to sell or otherwise dispose of the Shares acquired under the Plan within Canada. The Participant will be permitted to sell or dispose of any Shares only if such sale or disposal takes place outside Canada through the facilities of the stock exchange on which the Shares are traded.

Foreign Asset/Account Reporting Notification. If the total cost of the Participant's foreign specified property (including cash held outside Canada and RSUs and Shares acquired under the Plan) exceeds C$100,000 at any time during the year, the Participant must report all of his or her foreign specified property on Form T1135 (Foreign Income Verification Statement). Thus, unvested RSUs must be reported (generally at a nil cost) if the C$100,000 cost threshold is exceeded by other foreign specified property the Participant holds. When Shares are acquired, their cost generally is the adjusted cost base ("ACB") of the Shares. The ACB typically equals the fair market value of the Shares at the time of acquisition, but if the Participant owns other Shares, the ACB may have to be averaged with the ACB of the other Shares. The Participant should consult with his or her personal tax advisor to ensure compliance with any reporting requirements.

CHILE

NOTIFICATIONS

Securities Law Notification. This grant of RSUs constitutes a private offering of securities in Chile effective as of the Grant Date. This offer of RSUs is made subject to general ruling n° 336 of the Chilean Commission for the Financial Market ("CMF"). The offer refers to securities not registered at the securities registry or at the foreign securities registry of the CMF, and, therefore, such securities are not subject to oversight of the CMF. Given that the RSUs are not registered in Chile, the Company is not required to provide public information about the RSUs or the Shares in Chile. Unless the RSUs and/or the Shares are registered with the CMF, a public offering of such securities cannot be made in Chile.

Esta Oferta de Restricted Stock Units ("RSUs") constituye una oferta privada de valores en Chile y se inicia en la Fecha de la Oferta. Esta oferta de RSUs se acoge a las disposiciones de la Norma de Carácter General Nº 336 ("NCG 336") de la Comisión para el Mercado Financiero de Chile ("CMF"). Esta oferta versa sobre valores no inscritos en el Registro de Valores o en el Registro de Valores Extranjeros que lleva la CMF, por lo que tales valores no están sujetos a la fiscalización de ésta. Por tratarse de valores no inscritos en Chile no existe la obligación por parte de la Compañía de entregar en Chile información pública respecto de los mismos. Estos valores no podrán ser objeto de oferta pública en Chile mientras no sean inscritos en el Registro de Valores correspondiente.

Exchange Control Notification. The Participant is not required to repatriate funds obtained from the sale of Shares or the receipt of any dividends. However, if the Participant decides to repatriate such funds, the Participant must do so through the Formal Exchange Market ("Mercado Cambiario Formal") if the amount of the funds exceeds US$10,000. In such case, the Participant must report the payment to a commercial bank or registered foreign exchange office receiving the funds.

If the Participant's aggregate investments held outside Chile meets or exceeds US$5,000,000 (including the investments made under the Plan), the Participant must report the investments annually to the Central Bank ("Banco Central de

Chile"), no later than 60 calendar days following the closing of the month of December. Annex 3.1 of Chapter XII of the Foreign Exchange Regulations must be used to file this report.

Please note that exchange control regulations in Chile are subject to change. The Participant should consult with his or her personal legal advisor regarding any exchange control obligations that the Participant may have prior to the vesting of the RSUs.

Annual Tax Reporting Obligation. The Chilean Internal Revenue Service ("CIRS") requires Chilean residents to report the details of their foreign investments on an annual basis. Foreign investments include Shares acquired under the Plan. Further, if the Participant wishes to receive a credit against his or her Chilean income taxes for any taxes paid abroad, the Participant must also report the payment of taxes abroad to the CIRS. These reports must be submitted electronically through the CIRS website at www.sii.cl in accordance with applicable deadlines. In addition, Shares acquired upon settlement of the RSUs must be registered with the CIRS's Foreign Investment Registry. The Participant should consult with his or her personal legal and tax advisors to ensure compliance with applicable requirements.

FRANCE

TERMS AND CONDITIONS

RSUs Not Tax-Qualified. The Participant understands that the RSUs are not intended to be French tax-qualified pursuant to Section L. 225-197 1 to L. 225-197 6 of the French Commercial Code, as amended.

Language Consent. By accepting the RSUs, the Participant confirms having read and understood the Plan and the Award Agreement, including all terms and conditions included therein, which were provided in the English language. The Participant accepts the terms of those documents accordingly.

En acceptant ces <<RSUs>>, le Participant confirme avoir lu et compris le Plan et le convention, incluant tous leurs termes et conditions, qui ont été transmis en langue anglaise. Le Participant accepte les dispositions de ces documents en connaissance de cause.

NOTIFICATIONS

Foreign Asset/Account Reporting Notification. If the Participant holds securities (e.g., Shares) or maintains a foreign bank account, this must be reported to the French tax authorities when filing his or her annual tax return, whether such accounts are open, current or closed. Failure to comply could trigger significant penalties. The Participant should consult with his or her personal tax advisor to ensure compliance with applicable reporting obligations.

GERMANY

NOTIFICATIONS

Exchange Control Notification. Cross-border payments in connection with the sale of securities or any dividends received in relation to Shares in excess of €12,500 must be reported monthly to the German Federal Bank. The Participant is responsible for satisfying the reporting obligation and must file the report electronically by the fifth day of the month following the month in which the payment is made. A copy of the form can be accessed via the German Federal Bank's website at www.bundesbank.de and is available in both German and English. No report is required for payments less than €12,500.

Foreign Asset/Account Reporting Notification. In the unlikely event that the Participant holds Shares exceeding 1% of the Company's total shares of common stock, the Participant must notify his or her local tax office of the acquisition of Shares if the acquisition costs for all Shares held by the Participant exceeds €150,000 or if the Participant holds 10% or more in the Company's total shares of common stock.

HONDURAS

There are no country-specific provisions.

INDIA

NOTIFICATIONS

Exchange Control Notification. The Participant understands that the RSUs are subject to compliance with the exchange control requirements of the Reserve Bank of India. The Participant understands that he or she must repatriate and convert into local currency the proceeds from the sale of Shares acquired under the Plan within ninety (90) days of receipt and any proceeds from dividends paid on Shares held within one-hundred eighty (180) days of receipt, or within other such period of time as may be required under applicable regulations. The Participant will receive a foreign inward remittance certificate ("FIRC") from the bank where the Participant deposits the foreign currency. The Participant should maintain the FIRC as evidence of the repatriation of funds in the event the Reserve Bank of India or the Employer requests proof of repatriation. The Participant should consult with his or her personal legal advisor to ensure compliance with the applicable requirements.

Foreign Asset/Account Reporting Notification. The Participant is required to declare any foreign bank accounts and foreign financial assets (including Shares held outside India) in the Participant's annual tax return. It is the Participant's responsibility to comply with this reporting obligation and the Participant should consult with his or her personal tax advisor in this regard.

INDONESIA

TERMS AND CONDITIONS

Language Consent and Notification. By accepting the Award, the Participant (i) confirms having read and understood the documents relating to this grant (i.e., the Plan and the Award Agreement) which were provided in the English language, (ii) accepts the terms of those documents accordingly, and (iii) agrees not to challenge the validity of this document based on Law No. 24 of 2009 on National Flag, Language, Coat of Arms and National Anthem or the implementing Presidential Regulation (when issued).

Persetujuan dan Pemberitahuan Bahasa. Dengan menerima Penghargaan, Peserta (i) mengkonfirmasi bahwa dirinya telah membaca dan mengerti dokumen-dokumen yang terkait dengan pemberian ini (yaitu, Program dan Perjanjian Penghargaan) yang disediakan dalam Bahasa Inggris, (ii) menerima syarat-syarat dari dokumen-dokumen tersebut, dan (iii) setuju untuk tidak mengajukan keberatan atas keberlakuan dokumen ini berdasarkan Undang-Undang No. 24 Tahun 2009 tentang Bendera, Bahasa, dan Lambang Negara, Serta Lagu Kebangsaan atau Peraturan Presiden pelaksananya (ketika diterbitkan).

NOTIFICATIONS

Exchange Control Notification. Indonesian residents are obligated to provide Bank Indonesia with information on foreign exchange activities via a monthly report. Repatriation of proceeds from the sale of Shares or dividends back to Indonesia will trigger the reporting requirement. The report should be submitted online through Bank Indonesia's website no later than the 15th day of the month following the month in which the activity occurred.

In addition, if proceeds from the sale of Shares or dividends are repatriated to Indonesia, the Indonesian bank handling the transaction is responsible for submitting a report to Bank Indonesia. The Participant should be prepared to provide information, data and/or supporting documents upon request from the bank for purposes of preparing the report.

JAPAN

NOTIFICATIONS

Foreign Asset/Account Reporting Notification. The Participant is required to report details of any assets held outside Japan as of December 31, including Shares, to the extent such assets have a total net fair market value exceeding ¥50,000,000. Such report will be due from the Participant by March 15 each year. The Participant is responsible for complying with this reporting obligation and should consult with his or her personal tax advisor as to whether the Participant will be required to report the details of RSUs or Shares he or she holds.

JORDAN

There are no country-specific provisions.

MALAYSIA

TERMS AND CONDITIONS

Data Privacy. The following provision replaces the "Data Privacy Consent" provision set forth above in this Addendum:

The Participant hereby explicitly, voluntarily and unambiguously consents to the collection, use and transfer, in electronic or other form, of his or her personal data as described in the Award Agreement and any other Plan participation materials by and among, as applicable, the Company, the Employer and any other Affiliate or any third parties authorized by same in assisting in the implementation, administration and management of the Participant's participation in the Plan.	***Peserta dengan ini secara jelas, secara sukarela dan tanpa sebarang keraguan mengizinkan pengumpulan, penggunaan dan pemindahan, dalam bentuk elektronik atau lain-lain, data peribadinya seperti yang dinyatakan dalam Perjanjian ini dan apa-apa bahan penyertaan Pelan oleh dan di antara, sebagaimana yang berkenaan, Syarikat, Penerima Perkhidmatan dan mana-mana Syarikat Induk atau Anak Syarikat lain atau mana-mana pihak ketiga yang diberi kuasa oleh yang sama untuk membantu dalam pelaksanaan, pentadbiran dan pengurusan penyertaan Pesertadalam Pelan tersebut.***
The Participant may have previously provided the Company and the Employer with, and the Company and the Employer may hold, certain personal information about the Participant, including, but not limited to, his or her name, home address, email address and telephone number, date of birth, social insurance number, passport or other identification number, salary, nationality, job title, any shares of stock or directorships held in the Company, the fact and conditions of the Participant's participation in the Plan, details of all RSUs or any other entitlement to shares of stock awarded, cancelled, exercised, vested, unvested or outstanding in the Participant's favor ("Data"), for the exclusive purpose of implementing, administering and managing the Plan.	***Sebelum ini, Pesertamungkin telah membekalkan Syarikat dan Penerima Perkhidmatan dengan, dan Syarikat dan Majikan mungkin memegang, maklumat peribadi tertentu tentang Peserta, termasuk, tetapi tidak terhad kepada, namanya , alamat rumah dan nombor telefon, alamat emel, tarikh lahir, insurans sosia, nombor pasport atau pengenalan lain, gaji, kewarganegaraan, jawatan, apa-apa syer dalam saham atau jawatan pengarah yang dipegang dalam Syarikat, fakta dan syarat-syarat penyertaan Peserta dalam Pelan, butir-butir semua opsyenatau apa-apa hak lain untuk syer dalam saham yang dianugerahkan, dibatalkan, dilaksanakan, terletak hak, tidak diletak hak ataupun bagi faedah Peserta ("Data"), untuk tujuan yang eksklusif bagi melaksanakan, mentadbir dan menguruskan Pelan tersebut.***
The Participant also authorizes any transfer of Data, as may be required, to such stock plan service provider as may be selected by the Company from time to time, which is assisting the Company with the implementation, administration and management of the Plan and/or with whom any Shares acquired upon vesting of the RSUs are deposited. The Participant acknowledges that these recipients may be located in the Participant's country or elsewhere, and that the recipient's country (e.g., the United States) may have	***Peserta juga memberi kuasa untuk membuat apa-apa pemindahan Data, sebagaimana yang diperlukan, kepada pembekal perkhidmatan pelan saham sebagaimana yang dipilih oleh Syarikatdari semasa ke semasa, yang membantu Syarikat dalam pelaksanaan, pentadbiran dan pengurusan Pelandan/atau dengan sesiapa yang mendepositkan Saham yang diperolehi***

different data privacy laws and protections to the Participant's country, which may not give the same level of protection to Data. The Participant understands that he or she may request a list with the names and addresses of any potential recipients of Data by contacting his or her local human resources representative. The Participant authorizes the Company, the stock plan service provider and any other possible recipients which may assist the Company (presently or in the future) with implementing, administering and managing the Participant's participation in the Plan to receive, possess, use, retain and transfer Data, in electronic or other form, for the sole purpose of implementing, administering and managing the Participant's participation in the Plan. The Participant understands that Data will be held only as long as is necessary to implement, administer and manage his or her participation in the Plan. The Participant understands that he or she may, at any time, view Data, request additional information about the storage and processing of Data, require any necessary amendments to Data or refuse or withdraw the consents herein, in any case, without cost, by contacting in writing his or her local human resources representative, whose contact details are: ***No 8, Jalan Hi-Tech 3/3*** ***Zon Indusrtri Fasa 3, Kulim Hi Tech Park*** ***09000, Kulim, Kedah Darul Aman Malaysia*** ***Further, the Participant understands that he or she is providing the consents herein on a purely voluntary basis. If the Participant does not consent, or if the Participant later seeks to revoke the consent, his or her status and career with the Company and the Employer will not be adversely affected; the only adverse consequence of refusing or withdrawing the consent is that the Company would not be able to grant future RSUs or other equity awards to the Participant or administer or maintain such awards. Therefore, the Participant understands that refusing or withdrawing his or her consent may affect his or her ability to participate in the Plan. For more information on the consequences of the refusal to consent or withdrawal of consent, the Participant understands that he or she may contact his or her local human resources representative.***	***melalui pelaksanaan Opsyen ini. Peserta mengakui bahawa penerima-penerima ini mungkin berada di negara Peserta atau di tempat lain, dan bahawa negara penerima (contohnya, Amerika Syarikat) mungkin mempunyai undang-undang privasi data dan perlindungan yang berbeza daripada negaraPeserta, yang mungkin tidak boleh memberi tahap perlindungan yang sama kepada Data. Peserta faham bahawa dia boleh meminta senarai nama dan alamat mana-mana penerima Data dengan menghubungi wakil sumber manusia tempatannya. Peserta memberi kuasa kepada Syarikat, pembekal perkhidmatan pelan saham dan mana-mana penerima lain yang mungkin membantu Syarikat (masa sekarang atau pada masa depan) untuk melaksanakan, mentadbir dan menguruskan penyertaan Peserta dalam Pelan untuk menerima, memiliki, menggunakan, mengekalkan dan memindahkan Data, dalam bentuk elektronik atau lain-lain, semata-mata dengan tujuan untuk melaksanakan, mentadbir dan menguruskan penyertaan Peserta dalam Pelan tersebut. Peserta faham bahawa Data akan dipegang hanya untuk tempoh yang diperlukan untuk melaksanakan, mentadbir dan menguruskan penyertaannya dalam Pelan tersebut. Peserta faham bahawa dia boleh, pada bila-bila masa, melihat data, meminta maklumat tambahan mengenai penyimpanan dan pemprosesan Data, meminta bahawa pindaan-pindaan dilaksanakan ke atas Data atau menolak atau menarik balik persetujuan dalam ini, dalam mana-mana kes, tanpa kos, dengan menghubungi secara bertulis wakil sumber manusia di lokasi masing-masing, di mana butir-butir hubungannya adalah:*** ***No 8, Jalan Hi-Tech 3/3*** ***Zon Indusrtri Fasa 3, Kulim Hi Tech Park*** ***09000, Kulim, Kedah Darul Aman Malaysia*** ***Selanjutnya, Peserta memahami bahawa dia memberikan persetujuan di sini secara sukarela. Jika Peserta tidak bersetuju, atau jika Peserta kemudian membatalkan persetujuannya , status sebagai Pemberi Perkhidmatan dan kerjayanya dengan Penerima Perkhidmatan tidak akan terjejas; satunya akibat buruk jika dia tidak bersetuju atau menarik balik persetujuannya adalah bahawa Syarikat tidak akan dapat memberikan opsyen pada masa depan atau anugerah ekuiti lain kepada Peserta atau mentadbir atau mengekalkan anugerah tersebut. Oleh itu, Peserta faham bahawa keengganan atau penarikan balik persetujuannya boleh menjejaskan keupayaannya untuk mengambil bahagian dalam Pelan tersebut. Untuk maklumat lanjut mengenai akibat keengganannya untuk memberikan keizinan atau penarikan balik keizinan,Peserta fahami bahawa dia boleh menghubungi wakil sumber manusia tempatannya***

NOTIFICATIONS

Director Notification Obligation. If the Participant is a director of an Affiliate, the Participant is subject to certain notification requirements under the Malaysian Companies Act, 2016. Among these requirements is an obligation on the Participant's part to notify the Malaysian Affiliate in writing when the Participant acquires an interest (e.g., RSUs

or Shares) in the Company or any related companies. In addition, the Participant must notify the Malaysian Affiliate when the Participant sells Shares (including Shares acquired under the Plan) or the shares of any related company. These notifications must be made within 14 days of acquiring or disposing of any interest in the Company or any related company.

MEXICO

TERMS AND CONDITIONS

Labor Law Acknowledgment. By accepting the Award, the Participant acknowledges that he or she understands and agrees that: (a) the RSUs are not related to the salary and other contractual benefits provided to the Participant by the Employer; and (b) any modification of the Plan or its termination shall not constitute a change or impairment of the terms and conditions of the Participant's employment.

Policy Statement. The invitation the Company is making under the Plan is unilateral and discretionary and, therefore, the Company reserves the absolute right to amend it and discontinue it at any time without any liability to the Participant.
The Company, with registered offices at 350 West Washington Street, Suite 600, Tempe, Arizona 85281, United States of America is solely responsible for the administration of the Plan and participation in the Plan or the acquisition of Shares does not, in any way, establish an employment relationship between the Participant and the Company since the Participant is participating in the Plan on a wholly commercial basis and the sole employer is a Mexican legal entity that employs the Participant and to which he/she is subordinated, nor does it establish any rights between the Participant and the Employer.

Plan Document Acknowledgment. By accepting the Award, the Participant acknowledges that he or she has received a copy of the Plan, has reviewed the Plan and the Award Agreement in their entirety and fully understands and accepts all provisions of the Plan and the Award Agreement.

The Participant further acknowledges that having read and specifically and expressly approved the terms and conditions in the Section 9 of the Award Agreement, in which the following is clearly described and established: (a) participation in the Plan does not constitute an acquired right; (b) the Plan and participation in the Plan is offered by the Company on a wholly discretionary basis; (c) participation in the Plan is voluntary; and (d) the Company and its Affiliates are not responsible for any decrease in the value of the Shares underlying the RSUs.

Finally, the Participant does not reserve any action or right to bring any claim against the Company for any compensation or damages as a result of participation in the Plan and the Participant therefore grants a full and broad release to the Employer and the Company (including its Affiliates) with respect to any claim that may arise under the Plan.

Spanish Translation

Reconocimiento de la Ley Laboral. Al aceptar el Otorgamiento, el Beneficiario reconoce y acepta que: (a) las Unidades no se encuentran relacionadas con su salario ni con otras prestaciones contractuales concedidas por parte del Patrón; y (b) cualquier modificación del Plan o su terminación no constituye un cambio o impedimento de los términos y condiciones del empleo del Beneficiario.

Declaración de la Política. La invitación que hace la Compañía bajo el Plan es unilateral y discrecional, por lo que la Compañía se reserva el derecho absoluto de modificar e interrumpir el mismo en cualquier tiempo, sin ninguna responsabilidad para el Beneficiario.

La Compañía, con oficinas ubicadas en 350 West Washington Street, Suite 600, Tempe, Arizona 85281 United States of America, es la única responsable por la administración y la participación en el Plan, así como de la adquisición de acciones, por lo que de ninguna manera podrá establecerse una relación de trabajo entre el Beneficiario y la Compañía, ya que el Beneficiario participa únicamente en de forma comercial y que su único Patrón es una empresa legal Mexicana

a quien se encuentra subordinado; la participación en el Plan tampoco genera ningún derecho entre el Beneficiario y el Patrón.

Reconocimiento del Plan de Documentos. Al aceptar el Otorgamiento, el Beneficiario reconoce que ha recibido una copia del Plan, que lo ha revisado junto con el Convenio, y que ha entendido y aceptado completamente las disposiciones contenidas en el Plan y en el Convenio.

Adicionalmente, al firmar el presente documento, el Beneficiario reconoce que ha leído y aprobado de manera expresa y específica los términos y condiciones contenidos en el apartado 9 del Convenio, el cual claramente establece y describe: (a) que la participación en el Plan no constituye un derecho adquirido; (b) que el Plan y la participación en el mismo es ofrecido por la Compañía en forma totalmente discrecional; (c) que la participación en el Plan es voluntaria; y (d) que la Compañía, así como sus Afiliadas, no son responsables por cualquier detrimento en el valor de las acciones que integran las Unidades.

Finalmente, el Beneficiario acepta no reservarse ninguna acción o derecho para interponer una demanda en contra de la Compañía por compensación, daño o perjuicio alguno como resultado de su participación en el Plan y en consecuencia, otorga al Patrón el más amplio y completo finiquito que en derecho proceda, así como a la Compañía y sus Afiliadas, respecto a cualquier demanda que pudiera originarse derivada del Plan.

NETHERLANDS

TERMS AND CONDITIONS

Labor Law Acknowledgment. By accepting the RSU, the Participant acknowledges that: (i) the RSU is intended as an incentive to remain employed with the Employer and is not intended as remuneration for labor performed; and (ii) the RSU is not intended to replace any pension rights or compensation.

PHILIPPINES

NOTIFICATIONS

Securities Law Information. This offering is subject to exemption from the requirements of securities registration with the Philippines Securities and Exchange Commission, under Section 10.1 (k) of the Philippine Securities Regulation Code. Section 10.1(k) of the Philippine Securities Regulation Code provides as follows:

"Section 10.1 Exempt Transactions - The requirement of registration under Subsection 8.1 shall not apply to the sale of any security in any of the following section;

[. . .]

"(k) The sale of securities by an issuer to fewer than twenty (20) persons in the Philippines during any twelve-month period."

THE SECURITIES BEING OFFERED OR SOLD HAVE NOT BEEN REGISTERED WITH THE SECURITIES AND EXCHANGE COMMISSION UNDER THE SECURITIES REGULATION CODE. ANY FURTHER OFFER OR SALE THEREOF IS SUBJECT TO REGISTRATION REQUIREMENTS UNDER THE CODE UNLESS SUCH OFFER OR SALE QUALIFIES AS AN EXEMPT TRANSACTION.

The Participant acknowledges he or she is permitted to dispose or sell Shares acquired under the Plan provided the offer and resale of the Shares takes place outside the Philippines through the facilities of a stock exchange on which the Shares are listed. The Shares are currently listed on the NASDAQ Global Select Market in the United States of America.

SINGAPORE

NOTIFICATIONS

Securities Law Notification. The RSUs are being granted to the Participant pursuant to the "Qualifying Person" exemption under section 273(1)(f) of the Singapore Securities and Futures Act (Chapter 289, 2006 Ed.) ("SFA"). The Plan has not been lodged or registered as a prospectus with the Monetary Authority of Singapore. The Participant should note that such RSU grant is subject to section 257 of the SFA and the Participant will not be able to make any subsequent sale in Singapore, or any offer of such subsequent sale of the Shares underlying the Award, unless such sale or offer in Singapore is made (i) more than six months from the Grant Date, (ii) pursuant to the exemptions under Part XIII Division (1) Subdivision (4) (other than section 280) of the SFA, or (iii) pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA. The Shares are currently traded on the NASDAQ Global Select Market, which is located outside Singapore, and Shares acquired under the Plan may be sold through this exchange.

Chief Executive Officer/Director Notification Requirement. If the Participant is a Chief Executive Officer ("CEO"), director, associate director or shadow director of a Singaporean Affiliate, the Participant is subject to certain notification requirements under the Singapore Companies Act. Among these requirements is an obligation to notify the Singapore Affiliate in writing of an interest (e.g., unvested RSUs, Shares, etc.) in the Company or any Affiliate within two (2) business days of (i) its acquisition or disposal, (ii) any change in previously disclosed interest (e.g., when Shares acquired at vesting are sold), or (iii) becoming the CEO or a director, associate director or shadow director.

THAILAND

NOTIFICATIONS

Exchange Control Notification. Thai resident Participants realizing US$50,000 or more in a single transaction from the sale of Shares issued to the Participant following the vesting and settlement of the RSUs must repatriate the proceeds to Thailand and then convert such proceeds to Thai Baht or deposit the proceeds into a foreign currency account opened with any commercial bank in Thailand within 360 days of repatriation. If the amount of the Participant's proceeds is US$50,000 or more, the Participant must provide details of the transaction (i.e., identification information and purpose of the transaction) to the receiving bank. If the Participant fails to comply with these obligations, the Participant may be subject to penalties assessed by the Bank of Thailand. The Participant should consult his or her personal advisor before taking action with respect to the remittance of proceeds from the sale of Shares into Thailand. The Participant is responsible for ensuring compliance with all exchange control laws in Thailand.

TURKEY

NOTIFICATIONS

Securities Law Notification. Under Turkish law, the Participant is not permitted to sell any Shares acquired under the Plan in Turkey. The Shares are currently traded on the NASDAQ Global Select Market, which is located outside Turkey, under the ticker symbol "FSLR" and the Shares may be sold through this exchange.

Exchange Control Notification. Turkish residents are permitted to purchase and sell securities or derivatives traded on exchanges abroad only through a financial intermediary licensed in Turkey. Therefore, the Participant may be required to appoint a Turkish broker to assist the Participant with the sale of the Shares acquired under the Plan. The Participant should consult his or her personal legal advisor before selling any Shares acquired under the Plan to confirm the applicability of this requirement to the Participant.

UNITED ARAB EMIRATES ("UAE")

NOTIFICATIONS

Securities Law Notification. The RSUs are available only for select employees of the Company and its Affiliates and is in the nature of providing employee incentives in the UAE. This Award Agreement, the Addendum, the Plan and other incidental communication materials are intended for distribution only to eligible employees for the purposes of an employee compensation or reward scheme, and must not be delivered to, or relied on, by any other person.

The Dubai Creative Clusters Authority, Emirates Securities and Commodities Authority and/or the Central Bank of the United Arab Emirates have no responsibility for reviewing or verifying any documents in connection with the RSUs or this Award Agreement. Further, neither the Ministry of Economy nor the Dubai Department of Economic Development have approved this Award Agreement nor taken steps to verify the information set out in it, and have no responsibility for it.

The securities to which this Award Agreement relates may be illiquid and/or subject to restrictions on their resale. Individuals should conduct their own due diligence on the securities.

Residents of the UAE who do not understand or have questions regarding this Award Agreement, the Addendum or the Plan should consult an authorized financial adviser.

Form OPT-009

OPTION AWARD AGREEMENT under the FIRST SOLAR, INC. 2015 OMNIBUS INCENTIVE COMPENSATION PLAN, between First Solar, Inc. (the "Company"), a Delaware corporation, and the individual (the "Participant") set forth on the Grant Notice which incorporates this Form OPT-009 by reference.

This Option Award Agreement including any addendum hereto and the Grant Notice (collectively, this "Award Agreement") set forth the terms and conditions of an award of options (this "Award") that is being granted to the Participant set forth on the Grant Notice on the date set forth in the Grant Notice (such date, the "Grant Date"), under the terms of the First Solar, Inc. 2015 Omnibus Incentive Compensation Plan (the "Plan") covering one or more options ("Options") to purchase the number of shares of common stock of First Solar, Inc., par value $.001 (each a "Share") set forth in the Grant Notice, subject to the all terms and conditions of this Award Agreement and the Plan, including without limitation, THE DISPUTE RESOLUTION PROVISIONS SET FORTH IN SECTION 15 OF THIS AWARD AGREEMENT.

* * *

SECTION 1. **The Plan**. This Award is made pursuant to the Plan, all the terms of which are hereby incorporated in this Award Agreement. In the event of any conflict between the terms of the Plan, on the one hand, and the terms of this Award Agreement, on the other hand, the terms of the Plan shall govern.

SECTION 2. **Definitions**. The following terms are defined in this Award Agreement, and shall when capitalized have the meaning ascribed to them in this Award Agreement in the locations set forth below.

Defined Term	Cross-Ref.	Defined Term	Cross-Ref.
"Addendum"	Section 19	"Grant Date"	Paragraph 2
"Affiliate"	Section 3(a)	"Options"	Paragraph 2
"Award"	Paragraph 2	"Participant"	Paragraph 1
"Award Agreement"	Paragraph 2	"Plan"	Paragraph 2
"Business Day"	Section 16	"Share"	Paragraph 2
"Company"	Paragraph 1	"Tax-Related Items"	Section 7
"Employer"	Section 7	"Vesting Date"	Section 3(a)

Capitalized terms that are not defined in this Award Agreement shall have the meanings used or defined in the Plan.

SECTION 3. **Vesting and Exercise of Options**.

(a) Vesting. Except as otherwise determined by the Committee in its sole discretion, on each vesting date set forth in the Grant Notice (each a "Vesting Date"), the Option described in the Grant Notice shall be vested and exercisable with respect to the number of Shares that corresponds to the Vesting Date on the Grant Notice, provided that the Participant is actively employed by the Company or an Affiliate on the relevant Vesting Date. For purposes

of this Award Agreement, an "Affiliate" of the Company is an individual or entity that directly, or indirectly through one or more intermediaries, controls, or is controlled by, or is under common control with, the Company.

(b) Exercise of Options. Options, to the extent that they are vested and not previously expired or forfeited as described below in Section 4, may be exercised, in whole or in part (but for the purchase of whole Shares only), by delivery to the Company (i) of a written or electronic notice, complying with the applicable procedures established by the Committee or the Company, stating the number of Shares for which the Option is being exercised, and (ii) full payment, in accordance with Section 6(b) of the Plan, of the aggregate Exercise Price for the Shares with respect to which the Options are thereby exercised. The notice shall be submitted by the Participant or any other person then entitled to exercise the Options. As soon as practicable following the exercise and full payment of the Exercise Price for the Shares with respect to which the Options are exercised, the Company shall deliver to the Participant or the Participant's legal representative, as applicable, one Share for each Share for which the Options have been exercised; provided, however, that the delivery of Shares is further conditioned upon Participant's satisfaction of any applicable Tax-Related Items (as defined in Section 7 below) in accordance with Section 9(d) of the Plan.

SECTION 4. Expiration and Forfeiture of Options. Unless the Committee determines otherwise, or unless otherwise provided in the Grant Notice, a written agreement between the Company and the Participant or any other plan, policy or program of the Company then in effect,

(a) Vested but unexercised Options will expire (i) automatically on the date the Participant's employment or service relationship with the Company or any Affiliate is terminated for "cause" (as determined by the Company); (ii) six months after the Participant's employment or service relationship terminates due to death or the Participant's "disability" (as determined by the Company); or (iii) 180 days following the termination of the Participant's employment or service relationship for any other reasons. Notwithstanding any provision of this Award Agreement or any agreement between the Participant and the Company or any Affiliate to the contrary, all Options will automatically expire on the seventh anniversary of the Grant Date.

(b) Unvested Options will expire on the date employment or service with the Company and its Affiliates terminates for any reason.

(c) Upon expiration of the Options, all the Participant's rights with respect to such Options shall immediately terminate, and the Participant will be entitled to no further payments or benefits with respect thereto.

SECTION 5. Voting Rights; Dividend Equivalents. The Participant shall have no voting rights and shall not be entitled to receive any dividends or other distributions with respect to Shares covered by an Option prior to the date the Participant has exercised the Option with respect to such Shares and paid the full Exercise Price therefor.

SECTION 6. Options Not Transferable. Unless otherwise provided by the Committee in its discretion, Options may not be sold, assigned, alienated, transferred, pledged, attached or otherwise encumbered except as provided in Section 9(a) of the Plan. Any purported sale, assignment, alienation, transfer, pledge, attachment or other encumbrance of an Option in violation of the provisions of this Section 6 and Section 9(a) of the Plan shall be void.

SECTION 7. Responsibility for Taxes.

(a) Regardless of any action the Company or the Participant's employer, if other than the Company (the "Employer"), takes with respect to any or all federal, state or local income tax, social security contributions, payroll tax, payment on account or other tax-related items related to the Participant's participation in the Plan that are legally applicable to the Participant ("Tax-Related Items"), the Participant acknowledges that the ultimate liability for all Tax-Related Items is and remains the Participant's responsibility and that such liability may exceed the amount actually withheld by the Company or the Employer. The Participant further acknowledges that the Company and/or the Employer (i) make no representations or undertakings regarding the treatment of any Tax-Related Items in connection with any aspect of the Options, including, without limitation, the grant, vesting or exercise of the Options, the issuance of Shares

upon exercise of the Options, the subsequent sale of Shares acquired pursuant to such issuance and the receipt of any dividends; and (ii) do not commit to and are under no obligation to structure the terms of the Award or any aspect of the Options to reduce or eliminate the Participant's liability for Tax-Related Items or achieve any particular tax result. Further, if the Participant becomes subject to tax and/or social security contributions in more than one jurisdiction, the Participant acknowledges that the Company and/or the Employer (or former employer, as applicable) may be required to withhold or account for Tax-Related Items in more than one jurisdiction.

(b) Prior to any relevant taxable, tax and/or social security contribution withholding event, the Participant shall pay or make adequate arrangements satisfactory to the Company and/or the Employer to satisfy all Tax-Related Items. In this regard, the Participant authorizes the Company and/or the Employer, at their discretion, to satisfy any applicable withholding obligations with respect to all Tax-Related Items by one or a combination of the following:

(i) withholding from the Participant's wages or other cash compensation paid to the Participant by the Company and/or the Employer; or

(ii) withholding from proceeds of the sale of Shares acquired upon exercise of the Options, either through a voluntary sale or through a mandatory sale arranged by the Company (on the Participant's behalf pursuant to this authorization); or

(iii) by requiring direct payment from the Participant in cash (or its equivalent).

(c) Finally, the Participant shall pay to the Company or the Employer any amount of Tax-Related Items that the Company or the Employer may be required to withhold or account for as a result of the Participant's participation in the Plan that cannot be satisfied by the means previously described. The Participant expressly acknowledges that the delivery of Shares pursuant to Section 3(b) above is conditioned on satisfaction of all Tax-Related Items in accordance with this Section 7, and that the Company may refuse to deliver the Shares if the Participant fails to comply with the Participant's obligations in connection with the Tax-Related Items.

SECTION 8. Consents and Legends.

(a) Consents. The Participant's rights in respect of the Options are conditioned on the receipt to the full satisfaction of the Committee of any required consents that the Committee may determine to be necessary or advisable (including, without limitation, the Participant's consent to the Company's supplying to any third-party recordkeeper of the Plan such personal information as the Committee deems advisable to administer the Plan, as may further be described to the extent applicable discussing applicable data privacy considerations in an addendum to this Award Agreement, as described in Section 19).

(b) Legends. The Company may affix to certificates for Shares issued pursuant to the exercise of Options covered by this Award Agreement any legend that the Committee determines to be necessary or advisable (including to reflect any restrictions to which the Participant may be subject under any applicable securities laws). The Company may advise the applicable transfer agent to place a stop order against any legended Shares.

SECTION 9. Nature of Award. As a condition to receipt of this Award, the Participant acknowledges, understands and agrees that:

(a) the Plan is established voluntarily by the Company, is discretionary in nature and may be modified, amended, suspended or terminated by the Company at any time, unless otherwise provided in the Plan and this Award Agreement;

(b) this Award is exceptional, voluntary and occasional and does not create any contractual or other right to receive future awards of Options, or benefits in lieu of Options, even if Options have been granted repeatedly in the past;

(c) all decisions with respect to future awards of Options, if any, will be at the sole discretion of the Company;

(d) the Participant's participation in the Plan shall not create a right to further employment with the Employer and shall not interfere with the ability of the Employer to terminate the Participant's employment relationship at any time;

(e) the Participant's participation in the Plan is voluntary;

(f) the Options and any Shares issued upon exercise of the Options are extraordinary items that do not constitute compensation of any kind for services of any kind rendered to the Company or the Employer, and are outside the scope of the Participant's employment agreement, if any, unless such agreement is directly with the Company and specifically provides to the contrary;

(g) the Options and any Shares issued upon exercise of the Options, and the income from and value of same, are not intended to replace any pension rights or compensation;

(h) the Options and any Shares issued upon exercise of the Options, and the income from and value of same, are not part of normal or expected compensation or salary for any purposes, including, without limitation, calculating any severance, resignation, termination, redundancy, dismissal, end-of-service payments, bonuses, long-service awards, holiday pay, pension or retirement or welfare benefits or similar payments and in no event should be considered as compensation for, or relating in any way to, past services for the Company, the Employer, or any Affiliate;

(i) this Award and the Participant's participation in the Plan will not be interpreted to form or amend an employment or service agreement or relationship with the Company or any Affiliate;

(j) the future value of the underlying Shares is unknown and cannot be predicted with certainty;

(k) if the Shares underlying the Options do not increase in value, the Options will have no value;

(l) if the Participant exercises the Option and acquires Shares, the value of such Shares may increase or decrease in value, even below the Exercise Price;

(m) no claim or entitlement to compensation or damages shall arise from forfeiture of the Options resulting from termination of the Participant's employment or other service relationship by the Company or the Employer (for any reason whatsoever, whether or not later found to be invalid or in breach of employment laws in the jurisdiction where Participant is employed or the terms of Participant's employment agreement, if any);

(n) except as otherwise provided by the Committee or the Grant Notice, in the event of termination of the Participant's employment or service relationship, the Participant's right to vest in or exercise the Options under the Plan, if any, will terminate effective as of the date the Participant is no longer actively providing services to the Company, the Employer or any Affiliate of the Company (regardless of the reason for such termination and whether or not later found to be invalid or in breach of employment laws in the jurisdiction where the Participant is employed or the terms of the Participant's employment agreement, if any), and unless otherwise expressly provided in this Award Agreement or determined by the Company, (i) the Participant's right to vest in the Options under the Plan, if any, will terminate as of such date and will not be extended by any notice period (*e.g.*, the Participant's period of service would not include any contractual notice period or any period of "garden leave" or similar period mandated under employment laws in the jurisdiction where the Participant is employed or the terms of the Participant's employment agreement, if any); and (ii) the period (if any) during which the Participant may exercise the Option after such termination of the Participant's employment or service relationship will commence on the date the Participant ceases to actively provide services and will not be extended by any notice period mandated under employment laws in the jurisdiction where the Participant is employed or terms of the Participant's employment agreement, if any; the Committee shall have the exclusive

discretion to determine when the Participant is no longer actively employed for purposes of the Options (including whether the Participant may still be considered to be providing services while on a leave of absence);

(o) unless otherwise agreed with the Company, the Options and the benefits evidenced by this Award Agreement, and the income from and value of same, are not granted as consideration for, or in connection with, the service Participant may provide as a director of an Affiliate; and

(p) neither the Company nor the Employer or any Affiliate shall be liable for any foreign exchange rate fluctuation between the Participant's local currency and the United States Dollar that may affect the value of the Award or of any amounts due to the Participant pursuant to the exercise of the Options or the subsequent sale of any Shares acquired upon exercise.

SECTION 10. **No Advice Regarding Grant**. Nothing in this Award Agreement should be viewed as the provision by the Company of any tax, legal, or financial advice, nor is the Company making any recommendations regarding the Participant's participation in the Plan, or the Participant's acquisition or sale of the underlying Shares. The Participant understands and agrees that the Participant should consult with the Participant's own personal tax, legal and financial advisors regarding the Participant's participation in the Plan before taking any action in relation thereto.

SECTION 11. **Adjustments**. In the event of any change in the outstanding Shares by reason of any stock split, stock dividend, split-up, split-off, spin-off, recapitalization, merger, consolidation, rights offering, reorganization, combination or exchange of shares, sale by the Company of all or part of its assets, distribution to shareholders other than a normal cash dividend, or other extraordinary or unusual event occurring after the Grant Date and prior to the end of the vesting period, that affects the value of the Options or Shares, the number, class and kind of the securities subject to the Options, or the number of Options, as appropriate, shall be adjusted by the Committee to reflect the occurrence of such event.

SECTION 12. **Electronic Delivery**. The Company may, in its sole discretion, decide to deliver any documents related to current or future participation in the Plan by electronic means. Receipt of this Award is conditioned upon the Participant's consent to such electronic delivery and the Participant's agreement to participate in the Plan through an online or electronic system established and maintained by the Company or a third party designated by the Company.

SECTION 13. **Successors and Assigns of the Company**. The terms and conditions of this Award Agreement shall be binding upon and shall inure to the benefit of the Company and its successors and assigns.

SECTION 14. **Committee Discretion**. The Committee shall have full and plenary discretion with respect to any actions to be taken or determinations to be made in connection with this Award Agreement, and its determinations shall be final, binding and conclusive.

SECTION 15. **Dispute Resolution**.

(a) Jurisdiction and Venue. Notwithstanding any provision in any written or oral agreement between the Participant and the Company or any Affiliate, the Participant and the Company hereby irrevocably submit to the exclusive jurisdiction of (i) the United States District Court for the District of Delaware and (ii) the courts of the State of Delaware for the purposes of any action, suit or other proceeding arising out of this Award Agreement or the Plan. The Participant and the Company agree to commence any such action, suit or proceeding either in the United States District Court for the District of Delaware or, if such action, suit or other proceeding may not be brought in such court for jurisdictional reasons, in the courts of the State of Delaware. The Participant and the Company further agree that service of any process, summons, notice or document by U.S. registered mail (or its equivalent in the Participant's country of residence) to the applicable address set forth in Section 16 below shall be effective service of process for any action, suit or proceeding in Delaware with respect to any matters to which the Participant has submitted to jurisdiction in this Section 15(a). The Participant and the Company irrevocably and unconditionally waive any objection

to the laying of venue of any action, suit or proceeding arising out of this Award Agreement or the Plan in (A) the United States District Court for the District of Delaware, or (B) the courts of the State of Delaware, and hereby and thereby further irrevocably and unconditionally waive and agree not to plead or claim in any such court that any such action, suit or proceeding brought in any such court has been brought in an inconvenient forum.

(b) Waiver of Jury Trial. Notwithstanding any provision in any written or oral agreement between the Participant and the Company or any Affiliate, the Participant and the Company or its Affiliate hereby waive, to the fullest extent permitted by applicable law, any right either may have to a trial by jury in respect to any litigation directly or indirectly arising out of, under or in connection with this Award Agreement or the Plan.

(c) Confidentiality. The Participant hereby agrees to keep confidential the existence of, and any information concerning, a dispute described in this Section 15, except that the Participant may disclose information concerning such dispute to the court that is considering such dispute or to the Participant's legal counsel (provided that such counsel agrees not to disclose any such information other than as necessary to the prosecution or defense of the dispute).

SECTION 16. Notice. All notices, requests, demands and other communications required or permitted to be given under the terms of this Award Agreement shall be in writing and shall be deemed to have been duly given when delivered by hand or overnight courier or three Business Days after they have been mailed by U.S. registered mail (or its equivalent in the Participant's country of residence), return receipt requested, postage prepaid, addressed to the other party as set forth below:

If to the Company:	First Solar, Inc. 350 W Washington Street, Suite 600 Tempe, AZ 85281 Attention: Stock Plan Administrator
If to the Participant:	To the address most recently supplied to the Company and set forth in the Company's records

The parties may change the address to which notices under this Award Agreement shall be sent by providing written notice to the other in the manner specified above. For this purpose, "Business Day" means a day that is not a Saturday, a Sunday or a day on which banking institutions are legally permitted to be closed in Phoenix, Arizona, U.S.

SECTION 17. Governing Law. This Award Agreement shall be deemed to be made in the State of Delaware, and the validity, construction and effect of this Award Agreement in all respects shall be determined in accordance with the laws of the State of Delaware, without giving effect to the conflict of law principles thereof.

SECTION 18. Headings. Headings are given to the Sections and subsections of this Award Agreement solely as a convenience to facilitate reference. Such headings shall not be deemed in any way material or relevant to the construction or interpretation of this Award Agreement or any provision thereof.

SECTION 19. Country-Specific or Other Addenda.

(a) Notwithstanding any provisions in this Award Agreement or the Plan, this Award shall be subject to such special terms and conditions set forth in any Addendum attached hereto ("Addendum") or as may later become applicable, as described herein.

(b) If the Participant becomes subject to the laws of a jurisdiction to which an Addendum applies, the special terms and conditions for such jurisdiction will apply to this Award to the extent the Committee determines that

the application of such terms and conditions is necessary or advisable to comply with local laws or to facilitate the administration of the Plan; and provided the imposition of the term or condition will not result in any adverse accounting expense with respect to the Award.

(c) Any Addenda attached hereto shall be considered a part of this Award Agreement.

SECTION 20. **Severability**. The provisions of this Award Agreement are severable, and, if any one or more provisions are determined to be illegal or otherwise unenforceable, in whole or in part, the remaining provisions nevertheless shall be binding and enforceable.

SECTION 21. **Amendment of this Award Agreement**. The Committee may waive any conditions or rights under, amend any terms of, or alter, suspend, discontinue, cancel or terminate this Award Agreement prospectively or retroactively; provided, however, that any such waiver, amendment, alteration, suspension, discontinuance, cancellation or termination that would materially and adversely impair the Participant's rights under this Award Agreement shall not to that extent be effective without the Participant's consent (it being understood, notwithstanding the foregoing provision, that this Award Agreement and the Options shall be subject to the provisions of Section 7(c) of the Plan).

SECTION 22. **Imposition of Other Requirements**. The Company reserves the right to impose other requirements on the Participant's participation in the Plan, on the Options and on any Shares acquired under this Award, to the extent that the Company determines it is necessary or advisable to comply with local law or facilitate the administration of the Plan, and to require the Participant to sign any additional agreements or undertakings that may be necessary to accomplish the foregoing.

SECTION 23. **Acceptance of Terms and Conditions for Options**. As a condition to receipt of this Option Award, the Participant confirms that he/she has read and understood the documents relating to this Award (i.e., the Plan, this Award Agreement, including any Addendum). The Participant accepts the terms of those documents accordingly.

SECTION 24. **Counterparts**. Where signature of this Award Agreement is contemplated in the Grant Notice or any Addendum, this Award Agreement may be signed in counterparts, with the same effect as if the signatures thereto and hereto were upon the same instrument.

SECTION 25. **Code Section 409A**. The Options awarded pursuant to this Award Agreement are intended to be exempt from or comply with Section 409A of the Code, and the provisions of this Award Agreement will be interpreted, operated, and administered in a manner consistent with these intentions. Anything to the contrary in the Plan or this Award Agreement requiring the consent of the Participant notwithstanding, the Company reserves the right, to the extent the Company deems necessary or advisable in its sole discretion, to unilaterally amend or modify the Plan and/or this Award Agreement to ensure that the Options qualify for exemption from or comply with Section 409A of the Code; provided, however, that the Company makes no representations that the Options will be exempt from or comply with Section 409A of the Code, and makes no undertaking to preclude Section 409A of the Code from applying to the Options, and the Company will have no liability to the Participant or any other party if a payment under this Award Agreement that is intended to be exempt from, or compliant with, Section 409A of the Code is not so exempt or compliant or for any action taken by the Committee with respect thereto.

SECTION 26. **Waiver**. The Participant acknowledges that a waiver by the Company of breach of any provision of the Award Agreement shall not operate or be considered as a waiver of any other provision of the Award Agreement, or of any subsequent breach by the Participant or any other participant.

SECTION 27. **Insider Trading Restrictions/Market Abuse Laws**. The Participant acknowledges that the Participant may be subject to insider trading restrictions and/or market abuse laws based on the exchange on which the Shares are listed and in applicable jurisdictions, including the United States, the Participant's country and the designated broker's country, which may affect his or her ability to accept, acquire, sell or otherwise dispose of Shares,

rights to Shares (*e.g.*, Options) or rights linked to the value of Shares under the Plan during such times as the Participant is considered to have "inside information" regarding the Company (as defined by the laws in the applicable jurisdictions). Local insider trading laws and regulations may prohibit the cancellation or amendment of orders the Participant placed before the Participant possessed inside information. Furthermore, the Participant could be prohibited from (i) disclosing the inside information to any third party, which may include fellow employees and (ii) "tipping" third parties or causing them otherwise to buy or sell securities. Any restrictions under these laws or regulations are separate from and in addition to any restrictions that may be imposed under any applicable Company insider trading policy. The Participant acknowledges that it is his or her responsibility to comply with any applicable restrictions, and the Participant should consult his or her personal advisor on this matter.

SECTION 28. **Foreign Asset/Account, Exchange Control and Tax Reporting**. The Participant acknowledges that the Participant may be subject to foreign asset/account, exchange control and/or tax reporting requirements as a result of the acquisition, holding and/or transfer of Shares or cash (including dividends and the proceeds arising from the sale of Shares) derived from his or her participation in the Plan in, to and/or from a brokerage/bank account or legal entity located outside the Participant's country. The applicable laws of the Participant's country may require that the Participant report such accounts, assets, the balances therein, the value thereof and/or the transactions related thereto to the applicable authorities in such country. The Participant acknowledges that he or she is responsible for ensuring compliance with any applicable foreign asset/account, exchange control and tax reporting requirements and should consult his or her personal legal advisor on this matter.

SECTION 29. **Entire Agreement.** This Award Agreement (including any addenda), the Grant Notice and the Plan contain the entire agreement and understanding of the parties hereto with respect to the subject matter contained herein and supersede all prior communications, representations and negotiations in respect thereto.

ADDENDUM
ADDITIONAL TERMS AND CONDITIONS APPLICABLE TO
AWARD AGREEMENT (OPT-009)

TERMS AND CONDITIONS

This Addendum, which is part of the Award Agreement, includes additional terms and conditions that govern the Award and that will apply to the Participant if he or she resides in one of the countries listed below. Capitalized terms that are not defined in this Addendum shall have the meanings used or defined in the Award Agreement or the Plan.

NOTIFICATIONS

This Addendum also includes information regarding securities, exchange control and certain other issues of which the Participant should be aware with respect to his or her participation in the Plan. The information is based on the securities, exchange control and other laws in effect in the countries set forth below as of August 2019. Such laws are often complex and change frequently. As a result, the Participant should not rely solely on this Addendum for information relating to the consequences of participating in the Plan because such information may be outdated when the Participant's Options are granted, vest and/or the Participant exercises the Options or sells any Shares issued upon exercise of the Options.

In addition, the information set forth in this Addendum is general in nature and may not apply to the Participant's particular situation. As a result, the Company is not in a position to assure the Participant of any particular result. The Participant therefore should seek appropriate professional advice as to the application of relevant laws in the Participant's country to the Participant's particular situation.

Finally, if the Participant is a citizen or resident of a country other than the one in which he or she currently is working, or transfers to a different country after the Grant Date, the information set forth in this Addendum may not apply to the Participant.

ALL COUNTRIES OUTSIDE THE U.S.

Data Privacy Consent. Notice. The purpose of this Notice is to inform the Participant about how the Company processes the Participant's Personal Data in connection with the Plan and the Award Agreement. The Company is the controller of the Participant's Personal Data.

(a) Data Processing and Legal Basis. The Company collects, uses and otherwise processes Personal Data about the Participant for the Company's legitimate business interests for the purposes of allocating Shares and implementing, administering and managing the Plan and/or for the purposes of performing a contract between the Company and the Participant. The Personal Data processed by the Company may include, without limitation, the Participant's name, home address and telephone number, email address, date of birth, social insurance number, passport number or other identification number (e.g., resident registration number), salary, nationality, job title, any shares of stock or directorships held in the Company or its Affiliates, details of all Awards or any other entitlement to shares of stock or equivalent benefits awarded, canceled, exercised, vested, unvested or outstanding in the Participant's favor of implementing, administering and managing the Plan.

*(b) Stock Plan Administration Service Providers. The Company may transfer the Participant's Personal Data, or parts thereof, to (i) E*Trade Financial (and its affiliated companies), an independent service provider based in the United States which assists the Company with the implementation, administration and management of the Plan and (ii) My Equity Comp (and its affiliated companies), an independent service provider based in the United States which assists the Company with the preparation of tax forms and tax returns. In the future, the Company may select different service providers and share the Participant's Personal Data with such different service providers that serves the Company in a similar manner. The Company's service providers will open an account for the Participant to receive and trade Shares acquired under the Plan and that the Participant will be asked to agree on separate terms and data*

processing practices with the service provider, which is a condition of the Participant's ability to participate in the Plan. In addition to the foregoing service providers, the Company may transfer portions of the Participant's Personal Data related to the Participant's stock holdings to competent public authorities in connection with statutory audit reports and/or where required by law.

*(c) International Data Transfers. The Company and, as of the date hereof, any third parties assisting in the implementation, administration and management of the Plan, such as E*Trade Financial, are based in the United States. If the Participant is located outside the United States, the Participant's country may have enacted data privacy laws that are different from the laws of the United States. Where it is necessary to transfer the Participant's Personal Data to a different country to where the Participant is based, the Company has implemented appropriate safeguards to protect the Participant's Personal Data, including the execution of data transfer agreements with the recipient of the information. For further information, or a copy of, the adequate safeguards adopted by the Company, the Participant should contact the Participant's local human resources representative. The Company shall process any request in line with applicable law and the Company policy and procedures.*

(d) Data Retention. The Company will process the Participant's Personal Data only as long as is necessary to implement, administer and manage the Participant's participation in the Plan, or to comply with legal or regulatory obligations, including under tax and securities laws. In the latter case, the Participant understands and acknowledges that the Company's legal basis for the processing of the Participant's Personal Data would be compliance with the relevant laws or regulations. When the Company no longer needs the Participant's Personal Data for any of the above purposes, the Participant understands the Company will remove it from its systems.

*(e) Data Subject Rights**.** The Data subject rights regarding the processing of personal data vary depending on the applicable law and that, depending on where the Participant is based and subject to the conditions set out in the applicable law, the Participant may have, without limitation, the rights to (i) inquire whether and what kind of Personal Data the Company holds about the Participant and how it is processed, and to access or request copies of such Personal Data, (ii) request the correction or supplementation of Personal Data about the Participant that is inaccurate, incomplete or out- of-date in light of the purposes underlying the processing, (iii) obtain the erasure of Personal Data no longer necessary for the purposes underlying the processing, processed based on withdrawn consent, processed for legitimate interests that, in the context of the Participant's objection, do not prove to be compelling, or processed in non-compliance with applicable legal requirements, (iv) request the Company to restrict the processing of the Participant's Personal Data in certain situations where the Participant feels its processing is inappropriate, (v) object, in certain circumstances, to the processing of Personal Data for legitimate interests, and to (vi)request portability of the Participant's Personal Data that the Participant has actively orpassively provided to the Company (which does not include data derived or inferred from the collected data), where the processing of such Personal Data is based on consent or the Participant's employment and is carried out by automated means. In case of concerns, the Participant may also have the right to lodge a complaint with the competent local data protection authority. Further, to receive clarification of, or to exercise any of, the Participant's rights the Participant should contact the Participant's local human resources representative.*

Language. The Participant acknowledges that he or she is proficient in the English language, or has consulted with an advisor who is sufficiently proficient in English, so as to allow the Participant to understand the terms and conditions of this Award Agreement. If the Participant receives the Award Agreement or any other document related to the Plan translated into a language other than English and if the meaning of the translated version is different than the English version, the English version will control.

BELGIUM

TERMS AND CONDITIONS

Taxation of Options. The Participant will not be permitted to accept the Option within 60 days of the Grant Date which will be considered the "offer date" for purposes of the running of the 60-day period. Therefore, the Option will not be subject to Belgian tax until it is exercised by the Participant.

NOTIFICATIONS

Tax Reporting Notification. The Participant must report any taxable income attributable to the Award on the Participant's annual tax return.

Foreign Asset/Account Reporting Notification. The Participant must report any securities (e.g., the Shares) or bank or brokerage accounts opened and maintained outside Belgium on his or her annual tax return. In a separate report, the Participant is required to report to the National Bank of Belgium the details of such accounts opened and maintained outside Belgium. This report, as well as additional information on how to complete it, can be found on the website of the National Bank of Belgium, www.nbb.be, under the Kredietcentrales / Centrales des crédits caption.

Stock Exchange Tax. A stock exchange tax applies to transactions executed by a Belgian resident through a non-Belgian financial intermediary, such as a U.S. broker. The stock exchange tax will likely apply when Options are exercised and when Shares acquired upon exercise of the Options are sold. The Participant should consult with his or her personal tax advisor for additional details on his or her obligations with respect to the stock exchange tax.

Brokerage Account Tax. A brokerage account tax applies to Belgian residents if the average annual value of securities (including Shares) held in a brokerage account exceeds certain thresholds. Belgian residents should consult with a personal tax or financial advisor for additional details on their obligations with respect to the brokerage account tax.

BRAZIL

TERMS AND CONDITIONS

Compliance with Law. By accepting this Award, the Participant agrees to comply with applicable Brazilian laws and pay any and all applicable taxes associated with the issuance of Shares upon exercise of the Options, the subsequent sale of Shares obtained pursuant to the Options, and the receipt of any dividends.

Labor Law Acknowledgment. By accepting the Award, the Participant agrees that (i) he or she is making an investment decision, (ii) he or she will be entitled to exercise the Option and receive Shares only if the vesting conditions are met, and (iii) the value of the underlying Shares is not fixed and may increase or decrease in value over the vesting period without compensation to the Participant.

NOTIFICATIONS

Foreign Asset/Account Reporting Notification. If the Participant holds assets and rights outside Brazil with an aggregate value exceeding US$100,000, the Participant will be required to prepare and submit to the Central Bank of Brazil an annual declaration of such assets and rights, including: (i) bank deposits; (ii) loans; (iii) financing transactions; (iv) leases; (v) direct investments; (vi) portfolio investments, including Shares acquired under the Plan; (vii) financial derivatives investments; and (viii) other investments, including real estate and other assets. In addition, if the Participant holds such assets and rights outside Brazil with an aggregate value exceeding US$100,000,000, then quarterly reporting to the Central Bank of Brazil is required.

Please note that foreign individuals holding Brazilian visas are considered Brazilian residents for purposes of this reporting requirement and must declare at least the assets held abroad that were acquired subsequent to the date of admittance as a resident of Brazil. Individuals holding assets and rights outside Brazil valued at less than US$100,000 are not required to submit a declaration. Please note that the US$100,000 threshold may be changed annually.

Tax on Financial Transaction ("IOF"). Cross-border financial transactions relating to the Options may be subject to the IOF (tax on financial transactions). The Participant should consult with his or her personal tax advisor for additional details.

CANADA

TERMS AND CONDITIONS

Termination of Employment. The following provision replaces Section 9(n) of the Award Agreement:

Except as otherwise provided by the Committee or the Grant Notice, in the event of termination of the Participant's employment (regardless of the reason for such termination and whether or not later found invalid or in breach of employment laws in the jurisdiction where the Participant is employed or the terms of the Participant's employment agreement, if any), the Participant's right to vest in or exercise the Options under the Plan, if any, will terminate effective as of the date that is the earlier of (i) the date on which the Participant's employment is terminated by the Company or the Employer, (ii) the date on which the Participant receives a notice of termination of employment from the Company or the Employer, or (iii) the date on which the Participant is no longer providing active services to the Company or Employer, regardless of any notice period or period of pay in lieu of such notice required under local law; the Committee shall have the exclusive discretion to determine when the Participant is no longer employed for purposes of the Options (including whether the Participant may still be considered to be providing services while on a leave of absence).

The following terms and conditions apply if the Participant is in Quebec:

Authorization to Release and Transfer Necessary Personal Information. The following provision supplements the "Data Privacy Consent" provision set forth above in this Addendum:

The Participant hereby authorizes the Company and the Company's representatives to discuss with and obtain all relevant information from all personnel, professional or not, involved in the administration and operation of the Plan. The Participant further authorizes the Company and/or any Affiliate to disclose and discuss the Plan with their advisors. The Participant further authorizes the Company and any Affiliate to record and keep such information in the Participant's employment file.

French Language Acknowledgment. The following provision supplements the "Language" provision set forth above in this Addendum:

The parties acknowledge that it is their express wish that this Award Agreement, as well as all documents, notices and legal proceedings entered into, given or instituted pursuant hereto or relating directly or directly hereto, be drawn up in English.

Les parties reconnaissent avoir exigé la rédaction en anglais de cette convention, ainsi que de tous documents, avis et procédures judiciaires, exécutés, donnés ou intentés en vertu de, ou liés directement ou indirectement à, la présente convention.

NOTIFICATIONS

Securities Law Notification. The Participant will not be permitted to sell or otherwise dispose of the Shares acquired under the Plan within Canada. The Participant will be permitted to sell or dispose of any Shares only if such sale or disposal takes place outside Canada through the facilities of the stock exchange on which the Shares are traded.

Foreign Asset/Account Reporting Notification. If the total cost of the Participant's foreign specified property (including cash held outside Canada and the Options and Shares acquired under the Plan) exceeds C$100,000 at any time during the year, the Participant must report all of his or her foreign specified property on Form T1135 (Foreign Income Verification Statement). Thus, unvested Options must be reported (generally at a nil cost) if the C$100,000 cost threshold is exceeded by other foreign specified property the Participant holds. When Shares are acquired, their cost generally is the adjusted cost base ("ACB") of the Shares. The ACB typically equals the fair market value of the Shares at the time of acquisition, but if the Participant owns other Shares, the ACB may have to be averaged with the ACB of the other Shares. The Participant should consult with his or her personal tax advisor to ensure compliance with any reporting requirements

CHILE

NOTIFICATIONS

Securities Law Notification. This grant of Options constitutes a private offering of securities in Chile effective as of the Grant Date. This offer of Options is made subject to general ruling n° 336 of the Chilean Commission for the Financial Market ("CMF"). The offer refers to securities not registered at the securities registry or at the foreign securities registry of the CMF, and, therefore, such securities are not subject to oversight of the CMF. Given that the Options are not registered in Chile, the Company is not required to provide public information about the Options or the Shares in Chile. Unless the Options and/or the Shares are registered with the CMF, a public offering of such securities cannot be made in Chile.

Esta Oferta de las Opciónes constituye una oferta privada de valores en Chile y se inicia en la Fecha de la Oferta. Esta oferta de las Opciónes se acoge a las disposiciones de la Norma de Carácter General Nº 336 ("NCG 336") de la Comisión para el Mercado Financiero de Chile ("CMF"). Esta oferta versa sobre valores no inscritos en el Registro de Valores o en el Registro de Valores Extranjeros que lleva la CMF, por lo que tales valores no están sujetos a la fiscalización de ésta. Por tratarse de valores no inscritos en Chile no existe la obligación por parte de la Compañía de entregar en Chile información pública respecto de los mismos. Estos valores no podrán ser objeto de oferta pública en Chile mientras no sean inscritos en el Registro de Valores correspondiente.

Exchange Control Notification. It is the Participant's responsibility to ensure compliance with exchange control requirements in Chile when the value of the Participant's transaction is in excess of US$10,000. If the Options are exercised using a cashless exercise method and the aggregate value of the exercise price exceeds US$10,000, then the Participant must sign directly inform the the Central Bank ("*Banco Central de Chile*") of the transaction.

The Participant is not required to repatriate funds obtained from the sale of Shares or the receipt of any dividends. However, if the Participant decides to repatriate such funds, the Participant must do so through the Formal Exchange Market ("*Mercado Cambiario Formal*") if the amount of the funds exceeds US$10,000. In such case, the Participant must report the payment to a commercial bank or registered foreign exchange office receiving the funds.

If the Participant's aggregate investments held outside Chile meets or exceeds US$5,000,000 (including the investments made under the Plan), the Participant must report the investments annually to the Central Bank, no later than 60 calendar days following the closing of the month of December. Annex 3.1 of Chapter XII of the Foreign Exchange Regulations must be used to file this report.

Please note that exchange control regulations in Chile are subject to change. The Participant should consult with his or her personal legal advisor regarding any exchange control obligations that the Participant may have prior to the exercising the Options.

Annual Tax Reporting Obligation. The Chilean Internal Revenue Service ("CIRS") requires Chilean residents to report the details of their foreign investments on an annual basis. Foreign investments include Shares acquired under the Plan. Further, if the Participant wishes to receive a credit against his or her Chilean income taxes for any taxes paid abroad, the Participant must also report the payment of taxes abroad to the CIRS. These reports must be submitted electronically through the CIRS website at www.sii.cl. in accordance with applicable deadlines. In addition, Shares acquired upon exercise of Options must be registered with the CIRS's Foreign Investment Registry. The Participant should consult with his or her personal legal and tax advisors to ensure compliance with applicable requirements.

FRANCE

Options Not Tax-Qualified. The Option is not intended to qualify for specific tax and social security treatment applicable to stock options granted under Section L.225-177 to L.225-186-1 of the French Commercial Code, as amended.

Language Consent. By accepting the Option, the Participant confirms having read and understood the Plan and the Award Agreement, including all terms and conditions included therein, which were provided in the English language. The Participant accepts the terms of those documents accordingly.

En acceptant cette Option, le Participant confirme avoir lu et compris le Plan et le convention, incluant tous leurs termes et conditions, qui ont été transmis en langue anglaise. Le Participant accepte les dispositions de ces documents en connaissance de cause.

NOTIFICATIONS

Foreign Asset/Account Reporting Notification. If the Participant holds securities (e.g., Shares) or maintains a foreign bank account, this must be reported to the French tax authorities when filing his or her annual tax return, whether such accounts are open, current or closed. Failure to comply could trigger significant penalties. The Participant should consult with his or her personal tax advisor to ensure compliance with applicable reporting obligations.

GERMANY

NOTIFICATIONS

Exchange Control Notification. Cross-border payments in excess of €12,500 in connection with the sale of securities (e.g., Shares), dividends received in relation to Shares or the exercise of Options must be reported monthly to the German Federal Bank. The Participant is responsible for satisfying the reporting obligation and must file the report electronically by the fifth day of the month following the month in which the payment is made. A copy of the form can be accessed via the German Federal Bank's website at www.bundesbank.de and is available in both German and English. No report is required for payments less than €12,500.

Foreign Asset/Account Reporting Notification. In the unlikely event that the Participant holds Shares exceeding 1% of the Company's total shares of common stock, the Participant must notify his or her local tax office of the acquisition of Shares if the acquisition costs for all Shares held by the Participant exceeds €150,000 or if the Participant holds 10% or more in the Company's total shares of common stock.

HONDURAS

There are no country-specific provisions.

INDIA

TERMS AND CONDITIONS

Exercise of Options. This provision supplements Section 3(b) of the Award Agreement:

Due to regulatory requirements in India, upon the exercise of the Options, any Shares to be issued to the Participant will be immediately sold in a same-day sale transaction. In no case may the Participant exercise and hold Shares following the exercise of the Options. The Participant agrees that the Company is authorized to instruct its designated broker to assist with the mandatory sale of such Shares (on the Participant's behalf pursuant to this authorization) and the Participant expressly authorizes the Company's designated broker to complete the sale of such Shares. The Participant acknowledges that the Company's designated broker is under no obligation to arrange for the sale of the Shares at any particular price. Upon the sale of the Shares, the Company agrees to pay the Participant the cash proceeds from the sale, less any brokerage fees or commissions and subject to any obligation to satisfy Tax-Related Items.

NOTIFICATIONS

Exchange Control Notification. The Participant understands that the Options are subject to compliance with the exchange control requirements of the Reserve Bank of India. The Participant understands that he or she must repatriate and convert into local currency the proceeds from the sale of Shares acquired under the Plan within ninety (90) days of receipt and any proceeds from dividends paid on Shares held within one-hundred eighty (180) days of receipt, or within other such period of time as may be required under applicable regulations. The Participant will receive a foreign inward remittance certificate ("FIRC") from the bank where the foreign currency is deposited. The Participant should retain the FIRC as evidence of the repatriation of funds in the event that the Reserve Bank of India, the Employer or the Company requests proof of repatriation. The Participant should consult with his or her personal legal advisor to ensure compliance with the applicable requirements.

Foreign Asset/Account Reporting Notification. The Participant is required to declare any foreign bank accounts and foreign financial assets (including Shares held outside India) in the Participant's annual tax return. It is the Participant's responsibility to comply with this reporting obligation and the Participant should consult with his or her personal tax advisor in this regard.

INDONESIA

TERMS AND CONDITIONS

Exercise of Options. The following supplements Section 3(b) of the Award Agreement:

Due to regulatory requirements in Indonesia, the Participant will be required to exercise the Option using the cashless sell-all exercise method pursuant to which all Shares subject to the exercised Option will be sold immediately upon exercise and the proceeds of sale, less any Tax-Related Items broker's fees or commissions, will be remitted to the Participant in accordance with any applicable exchange control laws and regulations. The Participant acknowledges that the Company's designated broker is under no obligation to arrange for the sale of the Shares pursuant to the cashless sell-all exercise method at any particular price. The Company reserves the right to provide additional methods of exercise depending on the development of local law.

Language Consent and Notification. By accepting the Award, the Participant (i) confirms having read and understood the documents relating to this grant (*i.e.*, the Plan and the Award Agreement) which were provided in the English language, (ii) accepts the terms of those documents accordingly, and (iii) agrees not to challenge the validity of this document based on Law No. 24 of 2009 on National Flag, Language, Coat of Arms and National Anthem or the implementing Presidential Regulation (when issued).

Persetujuan dan Pemberitahuan Bahasa. Dengan menerima Penghargaan, Peserta (i) mengkonfirmasi bahwa dirinya telah membaca dan mengerti dokumen-dokumen yang terkait dengan pemberian ini (yaitu, Program dan Perjanjian Penghargaan) yang disediakan dalam Bahasa Inggris, (ii) menerima syarat-syarat dari dokumen-dokumen tersebut, dan (iii) setuju untuk tidak mengajukan keberatan atas keberlakuan dokumen ini berdasarkan Undang-Undang No. 24 Tahun tentang Bendera, Bahasa, dan Lambang Negara, Serta Lagu Kebangsaan atau Peraturan Presiden pelaksananya (ketika diterbitkan).

NOTIFICATIONS

Exchange Control Notification. Indonesian residents are obligated to provide Bank Indonesia with information on foreign exchange activities via a monthly report. Repatriation of proceeds from the sale of Shares or dividends back to Indonesia will trigger the reporting requirement. The report should be submitted online through Bank Indonesia's website no later than the 15th day of the month following the month in which the activity occurred.

In addition, if proceeds from the sale of Shares or dividends are repatriated to Indonesia, the Indonesian bank handling the transaction is responsible for submitting a report to Bank Indonesia. The Participant should be prepared to provide information, data and/or supporting documents upon request from the bank for purposes of preparing the report.

JAPAN

NOTIFICATIONS

Exchange Control Notification. If the Participant acquires Shares valued at more than ¥100 million in a single transaction, the Participant must file a Securities Acquisition Report with the Ministry of Finance (the "MOF") through the Bank of Japan within 20 days of the acquisition.

In addition, if the Participant pays more than ¥30 million in a single transaction for the purchase of Shares when the Participant exercises the Options, the Participant must file a Payment Report with the MOF through the Bank of Japan within 20 days of the date that the payment is made. The precise reporting requirements vary depending on whether or not the relevant payment is made through a bank in Japan. Please note that a Payment Report is required independently from a Securities Acquisition Report. Therefore, the Participant must file both a Payment Report and a Securities Acquisition Report if the total amount that the Participant pays in a single transaction for exercising the Options and purchasing Shares exceeds ¥100 million.

Foreign Asset/Account Reporting Notification. The Participant is required to report details of any assets held outside Japan as of December 31, including Shares, to the extent such assets have a total net fair market value exceeding ¥50,000,000. Such report will be due from the Participant by March 15 each year. The Participant is responsible for complying with this reporting obligation and should confer with his or her personal tax advisor as to whether the Participant will be required to report the details of Options or Shares he or she holds.

JORDAN

There are no country-specific provisions.

MALAYSIA

TERMS AND CONDITIONS

Data Privacy. The following provision replaces the "Data Privacy Consent" provision set forth above in this Addendum:

The Participant hereby explicitly, voluntarily and unambiguously consents to the collection, use and transfer, in electronic or other form, of his or her personal data as described in this Award Agreement and any other Plan participation materials by and among, as applicable, the Company, the Employer and any other Affiliate or any third parties authorized by same in assisting in the implementation, administration and management of the Participant's participation in the Plan. ***The Participant may have previously provided the Company and the Employer with, and the Company and the Employer may hold, certain personal information about the Participant, including, but not limited to, his or her name, home address, email address and telephone number, date of birth, social insurance number, passport or other identification number, salary, nationality, job title, any shares of stock or directorships held in the Company, the fact and conditions of the Participant's participation in the Plan, details of all options or any other entitlement to shares of stock awarded, cancelled, exercised, vested, unvested or outstanding in the Participant's favor ("Data"), for the exclusive purpose of implementing, administering and managing the Plan.*** ***The Participant also authorizes any transfer of Data, as may be required, to such stock plan service provider as may be selected by the Company from time to time, which is assisting the Company with the implementation, administration and management of the Plan and/or with whom any Shares acquired upon exercise of the Options are deposited. The Participant acknowledges that these recipients may be located in the Participant's country or elsewhere, and that the recipient's country (e.g., the United States) may have different data privacy laws and protections to the Participant's country, which may not give the same level of protection to Data. The Participant understands that he or she may request a list with the names and addresses of any potential recipients of Data by contacting his or her local human resources representative. The Participant authorizes the Company, the stock plan service provider and any other possible recipients which may assist the Company (presently or in the future) with implementing, administering and managing the Participant's participation in the Plan to receive, possess, use, retain and transfer Data, in electronic or other form, for the sole purpose of implementing, administering and managing the Participant's participation in the Plan. The Participant understands that Data will be held only as long as is necessary to implement, administer and manage his or her participation in the Plan.***	***Peserta dengan ini secara jelas, secara sukarela dan tanpa sebarang keraguan mengizinkan pengumpulan, penggunaan dan pemindahan, dalam bentuk elektronik atau lain-lain, data peribadinya seperti yang dinyatakan dalam Perjanjian ini dan apa-apa bahan penyertaan Pelan oleh dan di antara, sebagaimana yang berkenaan, Syarikat, Penerima Perkhidmatan dan mana-mana Syarikat Induk atau Anak Syarikat lain atau mana-mana pihak ketiga yang diberi kuasa oleh yang sama untuk membantu dalam pelaksanaan, pentadbiran dan pengurusan penyertaan Pesertadalam Pelan tersebut.*** ***Sebelum ini, Pesertamungkin telah membekalkan Syarikat dan Penerima Perkhidmatan dengan, dan Syarikat dan Majikan mungkin memegang, maklumat peribadi tertentu tentang Peserta, termasuk, tetapi tidak terhad kepada, namanya , alamat rumah dan nombor telefon, alamat emel, tarikh lahir, insurans sosia, nombor pasport atau, pengenalan lain, gaji, kewarganegaraan, jawatan, apa-apa syer dalam saham atau jawatan pengarah yang dipegang dalam Syarikat, fakta dan syarat-syarat penyertaan Peserta dalam Pelan, butir-butir semua opsyenatau apa-apa hak lain untuk syer dalam saham yang dianugerahkan, dibatalkan, dilaksanakan, terletak hak, tidak diletak hak ataupun bagi faedah Peserta ("Data"), untuk tujuan yang eksklusif bagi melaksanakan, mentadbir dan menguruskan Pelan tersebut.*** ***Peserta juga memberi kuasa untuk membuat apa-apa pemindahan Data, sebagaimana yang diperlukan, kepada pembekal perkhidmatan pelan saham sebagaimana yang dipilih oleh Syarikatdari semasa ke semasa, yang membantu Syarikat dalam pelaksanaan, pentadbiran dan pengurusan Pelandan/atau dengan sesiapa yang mendepositkan Saham yang diperolehi melalui pelaksanaan Opsyen ini. Peserta mengakui bahawa penerima-penerima ini mungkin berada di negara Peserta atau di tempat lain, dan bahawa negara penerima (contohnya, Amerika Syarikat) mungkin mempunyai undang-undang privasi data dan perlindungan yang berbeza daripada negaraPeserta, yang mungkin tidak boleh memberi tahap perlindungan yang sama kepada Data. Peserta faham bahawa dia boleh meminta senarai nama dan alamat mana-mana penerima Data dengan menghubungi wakil sumber manusia tempatannya. Peserta memberi kuasa kepada Syarikat, pembekal perkhidmatan pelan saham dan mana-mana penerima lain yang mungkin membantu Syarikat (masa sekarang atau pada masa depan) untuk melaksanakan, mentadbir dan menguruskan penyertaan Peserta dalam Pelan untuk menerima, memiliki, menggunakan, mengekalkan dan memindahkan Data, dalam bentuk elektronik atau lain-lain, semata-mata dengan tujuan untuk melaksanakan, mentadbir dan menguruskan penyertaan Peserta dalam Pelan tersebut. Peserta faham bahawa Data akan dipegang hanya untuk tempoh yang diperlukan untuk melaksanakan, mentadbir dan menguruskan penyertaannya dalam Pelan tersebut.***

The Participant understands that he or she may, at any time, view Data, request additional information about the storage and processing of Data, require any necessary amendments to Data or refuse or withdraw the consents herein, in any case, without cost, by contacting in writing his or her local human resources representative, whose contact details are: ***No 8, Jalan Hi-Tech 3/3*** ***Zon Indusrtri Fasa 3, Kulim Hi Tech Park*** ***09000, Kulim, Kedah Darul Aman Malaysia*** ***Further, the Participant understands that he or she is providing the consents herein on a purely voluntary basis. If the Participant does not consent, or if the Participant later seeks to revoke the consent, his or her status and career with the Employer will not be adversely affected; the only adverse consequence of refusing or withdrawing the consent is that the Company would not be able to grant future options or other equity awards to the Participant or administer or maintain such awards. Therefore, the Participant understands that refusing or withdrawing his or her consent may affect his or her ability to participate in the Plan. For more information on the consequences*** ***of the refusal to consent or withdrawal of consent,***	***Peserta faham bahawa dia boleh, pada bila-bila masa, melihat data, meminta maklumat tambahan mengenai penyimpanan dan pemprosesan Data, meminta bahawa pindaan-pindaan dilaksanakan ke atas Data atau menolak atau menarik balik persetujuan dalam ini, dalam mana-mana kes, tanpa kos, dengan menghubungi secara bertulis wakil sumber manusia di lokasi masing-masing, di mana butir-butir hubungannya adalah:*** ***No 8, Jalan Hi-Tech 3/3*** ***Zon Indusrtri Fasa 3, Kulim Hi Tech Park*** ***09000, Kulim, Kedah Darul Aman Malaysia*** ***Selanjutnya, Peserta memahami bahawa dia memberikan persetujuan di sini secara sukarela. Jika Peserta tidak bersetuju, atau jika Peserta kemudian membatalkan persetujuannya , status sebagai Pemberi Perkhidmatan dan kerjayanya dengan Penerima Perkhidmatan tidak akan terjejas; satunya akibat buruk jika dia tidak bersetuju atau menarik balik persetujuannya adalah bahawa Syarikat tidak akan dapat memberikan opsyen pada masa depan atau anugerah ekuiti lain kepada Peserta atau mentadbir atau mengekalkan anugerah tersebut. Oleh itu, Peserta faham bahawa keengganan atau penarikan balik persetujuannya boleh menjejaskan keupayaannya untuk mengambil bahagian dalam Pelan tersebut. Untuk maklumat lanjut mengenai akibat keengganannya untuk memberikan keizinan atau penarikan balik keizinan,Peserta fahami bahawa dia boleh menghubungi wakil sumber manusia tempatannya .***

NOTIFICATIONS

Director Notification Obligation. If the Participant is a director of an Affiliate, the Participant is subject to certain notification requirements under the Malaysian Companies Act, 2016. Among these requirements is an obligation on the Participant's part to notify the Malaysian Affiliate in writing when the Participant acquires an interest (e.g., Options or Shares) in the Company or any related companies. In addition, the Participant must notify the Malaysian Affiliate when the Participant sells Shares (including Shares acquired from exercise of Options under the Plan) or the shares of any related company. These notifications must be made within 14 days of acquiring or disposing of any interest in the Company or any related company.

MEXICO

TERMS AND CONDITIONS

Labor Law Acknowledgment. By accepting the Options, the Participant acknowledges that he or she understands and agrees that: (a) the Options are not related to the salary and other contractual benefits provided to the Participant by the Employer; and (b) any modification of the Plan or its termination shall not constitute a change or impairment of the terms and conditions of the Participant's employment.

Policy Statement. The invitation the Company is making under the Plan is unilateral and discretionary and, therefore, the Company reserves the absolute right to amend it and discontinue it at any time without any liability to the Participant.

The Company, with registered offices at 350 West Washington Street, Suite 600, Tempe, Arizona 85281, United States of America is solely responsible for the administration of the Plan and participation in the Plan or the acquisition of Shares does not, in any way, establish an employment relationship between the Participant and the Company since the Participant is participating in the Plan on a wholly commercial basis and the sole employer is a Mexican legal entity

that employs the Participant and to which he/she is subordinated, nor does it establish any rights between the Participant and the Employer.

Plan Document Acknowledgment. By accepting the Options, the Participant acknowledges that he or she has received a copy of the Plan, has reviewed the Plan and the Award Agreement in their entirety and fully understands and accepts all provisions of the Plan and the Award Agreement.

The Participant further acknowledges that having read and specifically and expressly approved the terms and conditions in the Section 9 of the Award Agreement, in which the following is clearly described and established: (a) participation in the Plan does not constitute an acquired right; (b) the Plan and participation in the Plan is offered by the Company on a wholly discretionary basis; (c) participation in the Plan is voluntary; and (d) the Company and its Affiliates are not responsible for any decrease in the value of the Shares underlying the Options.

Finally, the Participant does not reserve any action or right to bring any claim against the Company for any compensation or damages as a result of participation in the Plan and the Participant therefore grants a full and broad release to the Employer and the Company (including its Affiliates) with respect to any claim that may arise under the Plan.

Spanish Translation

Reconocimiento de la Ley Laboral. Al aceptar las Opciones, el Beneficiario reconoce y acepta que: (a) las Opciones no se encuentran relacionadas con su salario ni con otras prestaciones contractuales concedidas por parte del Patrón; y (b) cualquier modificación del Plan o su terminación no constituye un cambio o impedimento de los términos y condiciones del empleo del Beneficiario.

Declaración de la Política. La invitación que hace la Compañía bajo el Plan es unilateral y discrecional, por lo que la Compañía se reserva el derecho absoluto de modificar e interrumpir el mismo en cualquier tiempo, sin ninguna responsabilidad para el Beneficiario.

La Compañía, con oficinas ubicadas en 350 West Washington Street, Suite 600, Tempe, Arizona 85281, United States of America es la única responsable por la administración y la participación en el Plan, así como de la adquisición de acciones, por lo que de ninguna manera podrá establecerse una relación de trabajo entre el Beneficiario y la Compañía, ya que el Beneficiario participa únicamente en de forma comercial y que su único Patrón es una empresa legal Mexicana a quien se encuentra subordinado; la participación en el Plan tampoco genera ningún derecho entre el Beneficiario y el Patrón.

Reconocimiento del Plan de Documentos. Al aceptar las Opciones, el Beneficiario reconoce que ha recibido una copia del Plan, que lo ha revisado junto con el Convenio, y que ha entendido y aceptado completamente las disposiciones contenidas en el Plan y en el Convenio.

Adicionalmente, al firmar el presente documento, el Beneficiario reconoce que ha leído y aprobado de manera expresa y específica los términos y condiciones contenidos en el apartado 9 del Convenio, el cual claramente establece y describe: (a) que la participación en el Plan no constituye un derecho adquirido; (b) que el Plan y la participación en el mismo es ofrecido por la Compañía en forma totalmente discrecional; (c) que la participación en el Plan es voluntaria; y (d) que la Compañía, así como sus Afiliadas, no son responsables por cualquier detrimento en el valor de las acciones que integran las Opciones.

Finalmente, el Beneficiario acepta no reservarse ninguna acción o derecho para interponer una demanda en contra de la Compañía por compensación, daño o perjuicio alguno como resultado de su participación en el Plan y en consecuencia, otorga al Patrón el más amplio y completo finiquito que en derecho proceda, así como a la Compañía y a sus Afiliadas, respecto a cualquier demanda que pudiera originarse derivada del Plan.

NETHERLANDS

TERMS AND CONDITIONS

Labor Law Acknowledgment. By accepting the Option, the Participant acknowledges that: (i) the Option is intended as an incentive to remain employed with the Employer and is not intended as remuneration for labor performed; and (ii) the Option is not intended to replace any pension rights or compensation.

PHILIPPINES

NOTIFICATIONS

Securities Law Information. This offering is subject to exemption from the requirements of securities registration with the Philippines Securities and Exchange Commission, under Section 10.1 (k) of the Philippine Securities Regulation Code. Section 10.1(k) of the Philippine Securities Regulation Code provides as follows:

"Section 10.1 Exempt Transactions – The requirement of registration under Subsection 8.1 shall not apply to the sale of any security in any of the following section;

[. . .]

(k) The sale of securities by an issuer to fewer than twenty (20) persons in the Philippines during any twelve-month period."

THE SECURITIES BEING OFFERED OR SOLD HAVE NOT BEEN REGISTERED WITH THE SECURITIES AND EXCHANGE COMMISSION UNDER THE SECURITIES REGULATION CODE. ANY FURTHER OFFER OR SALE THEREOF IS SUBJECT TO REGISTRATION REQUIREMENTS UNDER THE CODE UNLESS SUCH OFFER OR SALE QUALIFIES AS AN EXEMPT TRANSACTION.

The Participant acknowledges he or she is permitted to dispose or sell Shares acquired under the Plan provided the offer and resale of the Shares takes place outside the Philippines through the facilities of a stock exchange on which the Shares are listed. The Shares are currently listed on the NASDAQ Global Select Market in the United States of America.

SINGAPORE

NOTIFICATIONS

Securities Law Notification. The Options are being granted to the Participant pursuant to the "Qualifying Person" exemption under section 273(1)(f) of the Singapore Securities and Futures Act (Chapter 289, 2006 Ed.) ("SFA"). The Plan has not been lodged or registered as a prospectus with the Monetary Authority of Singapore. The Participant should note that such Option grant is subject to section 257 of the SFA and the Participant will not be able to make any subsequent sale in Singapore, or any offer of such subsequent sale of the Shares underlying the Option unless such sale or offer in Singapore is made (i) more than six months from the Grant Date, (ii) pursuant to the exemptions under Part XIII Division (1) Subdivision (4) (other than section 280) of the SFA, or (iii) pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA. The Shares are currently traded on the NASDAQ Global Select Market, which is located outside Singapore, and Shares acquired under the Plan may be sold through this exchange.

Chief Executive Officer/Director Notification Requirement. If the Participant is a Chief Executive officer ("CEO"), director, associate director or shadow director of a Singaporean Affiliate, the Participant is subject to certain notification requirements under the Singapore Companies Act. Among these requirements is an obligation to notify the Singapore

Affiliate in writing of an interest (*e.g.*, Options, Shares, etc.) in the Company or any Affiliate within two business days of (i) its acquisition or disposal, (ii) any change in previously disclosed interest (*e.g.*, when Shares acquired at vesting are sold), or (iii) becoming the CEO or a director, associate director or shadow director.

TURKEY

NOTIFICATIONS

Securities Law Notification. Under Turkish law, the Participant is not permitted to sell any Shares acquired under the Plan in Turkey. The Shares are currently traded on the NASDAQ Global Select Market, which is located outside Turkey, under the ticker symbol "FSLR" and the Shares may be sold through this exchange.

Exchange Control Notification. Turkish residents are permitted to purchase and sell securities or derivatives traded on exchanges abroad only through a financial intermediary licensed in Turkey. Therefore, the Participant may be required to appoint a Turkish broker to assist the Participant with the exercise of the Options and the sale of the Shares acquired under the Plan. The Participant should consult his or her personal legal advisor before exercising the Options and/or selling any Shares acquired under the Plan to confirm the applicability of this requirement to the Participant.

UNITED ARAB EMIRATES ("UAE")

NOTIFICATIONS

Securities Law Notification. The Options are available only for select employees of the Company and its Affiliates and is in the nature of providing employee incentives in the UAE. This Award Agreement, the Addendum, the Plan and other incidental communication materials are intended for distribution only to eligible employees for the purposes of an employee compensation or reward scheme, and must not be delivered to, or relied on, by any other person.

The Dubai Creative Clusters Authority, Emirates Securities and Commodities Authority and/or the Central Bank of the United Arab Emirates have no responsibility for reviewing or verifying any documents in connection with the Options or this Award Agreement. Further, neither the Ministry of Economy nor the Dubai Department of Economic Development have approved this Award Agreement nor taken steps to verify the information set out in it, and have no responsibility for it.

The securities to which this Award Agreement relates may be illiquid and/or subject to restrictions on their resale. Individuals should conduct their own due diligence on the securities.

Residents of the UAE who do not understand or have questions regarding this Award Agreement, the Addendum or the Plan should consult an authorized financial adviser.

Form Share Award-009

Share Award Agreement under the First Solar, Inc. 2015 Omnibus Incentive Compensation Plan, between First Solar, Inc. (the "Company"), a Delaware corporation, and the individual (the "Participant") set forth on the Grant Notice which incorporates this Form Share Award-009 by reference.

This Share Award Agreement including any addendum hereto and the Grant Notice (collectively, this "Award Agreement") set forth the terms and conditions of an award of fully vested shares of the Company's common stock (this "Award") that is being granted to the Participant set forth on the Grant Notice on the date set forth in the Grant Notice (such date, the "Grant Date"), under the terms of the Company's 2015 Omnibus Incentive Compensation Plan (the "Plan") for the number of shares of common stock (the "Shares") set forth in the Grant Notice. This Award is subject to all the terms and conditions of this Award Agreement and the Plan, including without limitation, THE DISPUTE RESOLUTION PROVISIONS SET FORTH IN SECTION 10 OF THIS AWARD AGREEMENT.

* * *

SECTION 1. *The Plan. This Award is made pursuant to the Plan, all the terms of which are hereby incorporated in this Award Agreement. In the event of any conflict between the terms of the Plan, on the one hand, and the terms of this Award Agreement, on the other hand, the terms of the Plan shall govern.*

SECTION 2. *Definitions. The following terms are defined in this Award Agreement, and shall when capitalized have the meaning ascribed to them in this Agreement in the locations set forth below.*

Defined Term	**Cross-Ref.**	**Defined Term**	**Cross-Ref.**
"Addendum"	Section 14	"Grant Date"	Paragraph 2
"Award"	Paragraph 2	"Participant"	Paragraph 1
"Award Agreement"	Paragraph 2	"Plan"	Paragraph 2
"Business Day"	Section 11	"Share"	Paragraph 2
"Company"	Paragraph 1	"Tax-Related Items"	Section 3
"Employer"	Section 3		

Capitalized terms that are not defined in this Award Agreement shall have the meanings used or defined in the Plan.

SECTION 3. *Responsibility for Taxes.*

(a) Regardless of any action the Company or the Participant's employer, if other than the Company (the "Employer"), takes with respect to any or all federal, state or local income tax, social security contributions, payroll tax, payment on account or other tax-related items related to the Participant's participation in the Plan that are legally applicable to the Participant ("Tax-Related Items"), the Participant acknowledges that the ultimate liability for all Tax-Related Items is and remains the Participant's responsibility and that such liability may exceed the amount actually withheld by the Company or the Employer. The Participant further acknowledges that the Company and/or the Employer (i) make no representations or undertakings regarding the treatment of any Tax-Related Items in connection with any aspect of the Award, including, without limitation, the issuance of Shares, the

subsequent sale of Shares acquired pursuant to such issuance and the receipt of any dividends; and (ii) do not commit to and are under no obligation to structure the terms of the Award or any aspect of the Award to reduce or eliminate the Participant's liability for Tax-Related Items or achieve any particular tax result. Further, if the Participant becomes subject to tax and/or social security contributions in more than one jurisdiction, the Participant acknowledges that the Company and/or the Employer (or former employer, as applicable) may be required to withhold or account for Tax-Related Items in more than one jurisdiction.

(b) Prior to any relevant taxable, tax and/or social security contribution withholding event, the Participant shall pay or make adequate arrangements satisfactory to the Company and/or the Employer to satisfy all Tax-Related Items. In this regard, the Participant authorizes the Company or its agent to satisfy any applicable withholding obligations with regards to Tax-Related Items by withholding a number of Shares to be issued upon settlement of the Award. If, for any reason, the Shares that would otherwise be deliverable to the Participant upon settlement of the Award would be insufficient to satisfy the tax withholding obligations, or if such withholding in Shares is problematic under applicable tax or securities law or has materially adverse accounting consequences, the Participant authorizes (i) the Company and any brokerage firm determined acceptable to the Company to sell on the Participant's behalf a whole number of Shares from those Shares to be issued to the Participant as the Company determines to be appropriate to generate cash proceeds sufficient to satisfy any applicable withholding obligations for Tax-Related Items (ii) the Company, the Employer and any Affiliate to withhold an amount from the Participant's wages or other compensation or require the Participant to make a cash payment sufficient to fully satisfy any applicable withholding obligations for Tax-Related Items.

(c) Depending on the withholding method, the Company may withhold or account for Tax-Related Items by considering applicable minimum statutory withholding amounts or other applicable withholding rates, including maximum withholding rates, in which case the Participant will receive a refund of any over-withheld amount in cash and will have no entitlement to the equivalent in Shares. If the obligation for Tax-Related Items is satisfied by withholding in Shares, the Participant is deemed, for tax and/or social security contributions and other purposes, to have been issued the full number of Shares, notwithstanding that a number of Shares are held back solely for the purposes of paying the Tax-Related Items due as a result of any aspect of the Participant's participation in the Plan.

(d) The Participant shall pay to the Company or the Employer any amount of Tax-Related Items that the Company or the Employer may be required to withhold or account for as a result of the Participant's participation in the Plan that cannot be satisfied by the means previously described. The Participant expressly acknowledges that the delivery of Shares is conditioned on satisfaction of all Tax-Related Items in accordance with this Section 3, and that the Company may refuse to deliver the Shares if the Participant fails to comply with the Participant's obligations in connection with the Tax-Related Items.

SECTION 4. *Consents and Legends.*

(a) Consents. The Participant's rights in respect of the Shares are conditioned on the receipt to the full satisfaction of the Committee of any required consents that the Committee may determine to be necessary or advisable (including, without limitation, the Participant's consent to the Company's supplying to any third-party recordkeeper of the Plan such personal information as the Committee deems advisable to administer the Plan, as may further be described to the extent applicable discussing applicable data privacy considerations in an addendum to this Award Agreement, as described in Section 14).

(b) Legends. The Company may affix to certificates for Shares issued pursuant to this Award Agreement any legend that the Committee determines to be necessary or advisable (including to reflect any restrictions to which the Participant may be subject under any applicable securities laws). The Company may advise the applicable transfer agent to place a stop order against any legended Shares.

SECTION 5. *Nature of Award. As a condition to receipt of this Award, the Participant acknowledges, understands and agrees that:*

(a) the Plan is established voluntarily by the Company, is discretionary in nature and may be modified, amended, suspended or terminated by the Company at any time, unless otherwise provided in the Plan and this Award Agreement;

(b) this Award is exceptional, voluntary and occasional and does not create any contractual or other right to receive future awards, or benefits in lieu of awards, even if Shares have been granted repeatedly in the past;

(c) all decisions with respect to future awards, if any, will be at the sole discretion of the Company;

(d) the Participant's participation in the Plan shall not create a right to further employment with the Employer and shall not interfere with the ability of the Employer to terminate the Participant's employment relationship at any time;

(e) the Participant's participation in the Plan is voluntary;

(f) the Shares are extraordinary items that do not constitute compensation of any kind for services of any kind rendered to the Company or the Employer, and which are outside the scope of the Participant's employment agreement, if any, unless such agreement is directly with the Company and specifically provides to the contrary;

(g) the Shares, and the income from and value of same, are not intended to replace any pension rights or compensation;

(h) the Shares, and the income from and value of same, are not part of normal or expected compensation or salary for any purposes, including, without limitation, calculating any severance, resignation, termination, redundancy, dismissal, end-of-service payments, bonuses, long-service awards, holiday pay, pension or retirement or welfare benefits or similar payments and in no event should be considered as compensation for, or relating in any way to, past services for the Company, the Employer, or any Affiliate (as defined in the Plan);

(i) this Award and the Participant's participation in the Plan will not be interpreted to form or amend an employment agreement or relationship with the Company or any Affiliate;

(j) the future value of the underlying Shares is unknown and cannot be predicted with certainty;

(k) unless otherwise agreed with the Company, the Shares, and the income from and value of same, are not granted as consideration for, or in connection with, the service Participant may provide as a director of an Affiliate; and

(l) neither the Company nor the Employer or any Affiliate shall be liable for any foreign exchange rate fluctuation between the Participant's local currency and the United States Dollar that may affect the value of the Award or of any amounts due to the Participant for the subsequent sale of the Share.

SECTION 6. *No Advice Regarding Grant. Nothing in this Award Agreement should be viewed as the provision by the Company of any tax, legal, or financial advice, nor is the Company making any recommendations regarding the Participant's participation in the Plan, or the Participant's acquisition or sale of the underlying Shares. The Participant understands and agrees that the Participant should consult with the Participant's own personal tax, legal and financial advisors regarding the Participant's participation in the Plan before taking any action in relation thereto.*

SECTION 7. *Electronic Delivery. The Company may, in its sole discretion, decide to deliver any documents related to current or future participation in the Plan by electronic means. Receipt of this Award is conditioned upon the Participant's consent to such electronic delivery and the Participant's agreement to participate in the Plan through an online or electronic system established and maintained by the Company or a third party designated by the Company.*

SECTION 8. *Successors and Assigns of the Company. The terms and conditions of this Award Agreement shall be binding upon and shall inure to the benefit of the Company and its successors and assigns.*

SECTION 9. *Committee Discretion. The Committee shall have full and plenary discretion with respect to any actions to be taken or determinations to be made in connection with this Award Agreement, and its determinations shall be final, binding and conclusive.*

SECTION 10. *Dispute Resolution.*

(a) Jurisdiction and Venue. Notwithstanding any provision in any employment agreement between the Participant and the Company or any Affiliate, the Participant and the Company hereby irrevocably submit to the exclusive jurisdiction of (i) the United States District Court for the District of Delaware and (ii) the courts of the State of Delaware for the purposes of any action, suit or other proceeding arising out of this Award Agreement or the Plan. The Participant and the Company agree to commence any such action, suit or proceeding either in the United States District Court for the District of Delaware or, if such action, suit or other proceeding may not be brought in such court for jurisdictional reasons, in the courts of the State of Delaware. The Participant and the Company further agree that service of any process, summons, notice or document by U.S. registered mail (or its equivalent in the Participant's country of residence) to the applicable address set forth in Section 11 below shall be effective service of process for any action, suit or proceeding in Delaware with respect to any matters to which the Participant has submitted to jurisdiction in this Section 10(a). The Participant and the Company irrevocably and unconditionally waive any objection to the laying of venue of any action, suit or proceeding arising out of this Award Agreement or the Plan in (A) the United States District Court for the District of Delaware, or (B) the courts of the State of Delaware, and hereby and thereby further irrevocably and unconditionally waive and agree not to plead or claim in any such court that any such action, suit or proceeding brought in any such court has been brought in an inconvenient forum.

(b) Waiver of Jury Trial. Notwithstanding any provision in the Participant's employment agreement, if any, between the Participant and the Company, the Participant and the Company hereby waive, to the fullest extent permitted by applicable law, any right either may have to a trial by jury in respect to any litigation directly or indirectly arising out of, under or in connection with this Award Agreement or the Plan.

(c) Confidentiality. The Participant hereby agrees to keep confidential the existence of, and any information concerning, a dispute described in this Section 10, except that the Participant may disclose information concerning such dispute to the court that is considering such dispute or to the Participant's legal counsel (provided that such counsel agrees not to disclose any such information other than as necessary to the prosecution or defense of the dispute).

SECTION 11. *Notice. All notices, requests, demands and other communications required or permitted to be given under the terms of this Award Agreement shall be in writing and shall be deemed to have been duly given when delivered by hand or overnight courier or three Business Days after they have been mailed by U.S. registered mail (or its equivalent in the Participant's country of residence), return receipt requested, postage prepaid, addressed to the other party as set forth below:*

If to the Company:	First Solar, Inc. 350 W Washington Street, Suite 600 Tempe, AZ 85281 Attention: Stock Plan Administrator
If to the Participant:	To the address most recently supplied to the Company and set forth in the Company's records

The parties may change the address to which notices under this Award Agreement shall be sent by providing written notice to the other in the manner specified above. For this purpose, "Business Day" means a day that is not a Saturday, a Sunday or a day on which banking institutions are legally permitted to be closed in Phoenix, Arizona, U.S.

SECTION 12. *Governing Law. This Award Agreement shall be deemed to be made in the State of Delaware, and the validity, construction and effect of this Award Agreement in all respects shall be determined in accordance with the laws of the State of Delaware, without giving effect to the conflict of law principles thereof.*

SECTION 13. *Headings. Headings are given to the Sections and subsections of this Award Agreement solely as a convenience to facilitate reference. Such headings shall not be deemed in any way material or relevant to the construction or interpretation of this Award Agreement or any provision thereof.*

SECTION 14. *Country-Specific or Other Addenda.*

(a) Notwithstanding any provisions in this Award Agreement or the Plan, this Award shall be subject to such special terms and conditions set forth in any Addendum attached hereto ("Addendum") or as may later become applicable, as described herein.

(b) If the Participant becomes subject to the laws of a jurisdiction to which an Addendum applies, the special terms and conditions for such jurisdiction will apply to this Award to the extent the Committee determines that the application of such terms and conditions is necessary or advisable to comply with local laws or to facilitate the administration of the Plan; provided the imposition of the term or condition will not result in any adverse accounting expense with respect to the Award

(c) Any Addendum attached hereto shall be considered a part of this Award Agreement.

SECTION 15. *Severability. The provisions of this Award Agreement are severable, and, if any one or more provisions are determined to be illegal or otherwise unenforceable, in whole or in part, the remaining provisions nevertheless shall be binding and enforceable.*

SECTION 16. *Amendment of this Award Agreement. The Committee may waive any conditions or rights under, amend any terms of, or alter, suspend, discontinue, cancel or terminate this Award Agreement prospectively or retroactively; provided, however, that any such waiver, amendment, alteration, suspension, discontinuance, cancellation or termination that would materially and adversely impair the Participant's rights under this Award Agreement shall not, to the extent of such impairment, be effective without the Participant's consent (it being understood, notwithstanding the foregoing proviso, that this Award Agreement shall be subject to the provisions of Section 7(c) of the Plan).*

SECTION 17. *Imposition of Other Requirements. The Company reserves the right to impose other requirements on the Participant's participation in the Plan, and on any Shares acquired under this Award, to the extent that the Company determines it is necessary or advisable to comply with local law or facilitate the administration of the Plan, and to require the Participant to sign any additional agreements or undertakings that may be necessary to accomplish the foregoing.*

SECTION 18. *Award Conditioned On Acceptance of Terms and Conditions. The delivery of the Shares is conditioned on Participant's acceptance of the terms and conditions of this Award as set forth herein. If the Award is accepted electronically or otherwise, such acceptance shall include Participant's confirmation that he/she has read and understood the documents relating to this Award (i.e., the Plan, this Award Agreement, including any Addendum) and accepts the terms of those documents accordingly.*

SECTION 19. *Counterparts. Where signature of this Award Agreement is contemplated in the Grant Notice or any Addendum, this Award Agreement may be signed in counterparts, with the same effect as if the signatures thereto and hereto were upon the same instrument.*

SECTION 20. *Waiver. The Participant acknowledges that a waiver by the Company of breach of any provision of the Award Agreement shall not operate or be considered as a waiver of any other provision of the Award Agreement, or of any subsequent breach by the Participant or any other participant.*

SECTION 21. *Insider Trading Restrictions/Market Abuse Laws. The Participant acknowledges that the Participant may be subject to insider trading restrictions and/or market abuse laws based on the exchange on which the Shares are listed and in applicable jurisdictions, including the United States, the Participant's country and the designated broker's country, that may affect his or her ability to accept, acquire, sell or otherwise dispose of Shares, rights to Shares (e.g., the Award) or rights linked to the value of Shares under the Plan during such times as the Participant is considered to have "inside information" regarding the Company (as defined by the laws in the applicable jurisdictions). Local insider trading laws and regulations may prohibit the cancellation or amendment of orders the Participant placed before the Participant possessed inside information. Furthermore, the Participant could be prohibited from (i) disclosing the inside information to any third party, which may include fellow employees and (ii) "tipping" third parties or causing them otherwise to buy or sell securities. Any restrictions under these laws or regulations are separate from and in addition to any restrictions that may be imposed under any applicable Company insider trading policy. The Participant acknowledges that it is his or her responsibility to comply with any applicable restrictions, and the Participant should consult his or her personal advisor on this matter.*

SECTION 22. *Foreign Asset/Account, Exchange Control and Tax Reporting. The Participant acknowledges that the Participant may be subject to foreign asset/account, exchange control and/or tax reporting requirements as a result of the acquisition, holding and/or transfer of Shares or cash (including dividends and the proceeds arising from the sale of Shares) derived from his or her participation in the Plan in, to and/or from a brokerage/bank account or legal entity located outside the Participant's country. The applicable laws of the Participant's country may require that the Participant report such accounts, assets, the balances therein, the value thereof and/or the transactions related thereto to the applicable authorities in such country. The Participant acknowledges that he or she is responsible for ensuring compliance with any applicable foreign asset/account, exchange control and tax reporting requirements and should consult his or her personal legal advisor on this matter.*

SECTION 23. *Entire Agreement. This Award Agreement (including any addenda), the Grant Notice and the Plan contain the entire agreement and understanding of the parties hereto with respect to the subject matter contained herein and supersede all prior communications, representations and negotiations in respect thereto.*

ADDENDUM
ADDITIONAL TERMS AND CONDITIONS APPLICABLE TO
AWARD AGREEMENT (SHARE AWARD-009)

TERMS AND CONDITIONS

This Addendum, which is part of the Award Agreement, includes additional terms and conditions that govern the Shares and that will apply to the Participant if he or she resides in one of the countries listed below. Capitalized terms that are not defined in this Addendum shall have the meanings used or defined in the Award Agreement or the Plan.

NOTIFICATIONS

This Addendum also includes information regarding securities, exchange control and certain other issues of which the Participant should be aware with respect to his or her participation in the Plan. The information is based on the securities, exchange control and other laws in effect in the countries set forth below as of August 2019. Such laws are often complex and change frequently. As a result, the Participant should not rely solely on this Addendum for information relating to the consequences of participating in the Plan because such information may be outdated when the Participant is issued or sells any Shares acquired under the Plan.

In addition, the information set forth in this Addendum is general in nature and may not apply to the Participant's particular situation. As a result, the Company is not in a position to assure the Participant of any particular result. The Participant therefore should seek appropriate professional advice as to the application of relevant laws in the Participant's country to the Participant's particular situation.

Finally, if the Participant is a citizen or resident of a country other than the one in which he or she currently is working, or transfers to a different country after the Grant Date, the information set forth in this Addendum may not apply to the Participant.

ALL COUNTRIES OUTSIDE THE U.S.

Data Privacy Consent. Notice. The purpose of this Notice is to inform the Participant about how the Company processes the Participant's Personal Data in connection with the Plan and the Award Agreement. The Company is the controller of the Participant's Personal Data.

(a) Data Processing and Legal Basis. The Company collects, uses and otherwise processes Personal Data about the Participant for the Company's legitimate business interests for the purposes of allocating Shares and implementing, administering and managing the Plan and/or for the purposes of performing a contract between the Company and the Participant. The Personal Data processed by the Company may include, without limitation, the Participant's name, home address and telephone number, email address, date of birth, social insurance number, passport number or other identification number (e.g., resident registration number), salary, nationality, job title, any shares of stock or directorships held in the Company or its Affiliates, details of all Awards or any other entitlement to shares of stock or equivalent benefits awarded, canceled, exercised, vested, unvested or outstanding in the Participant's favor of implementing, administering and managing the Plan.

*(b) Stock Plan Administration Service Providers. The Company may transfer the Participant's Personal Data, or parts thereof, to (i) E*Trade Financial (and its affiliated companies), an independent service provider based in the United States which assists the Company with the implementation, administration and management of the Plan and (ii) My Equity Comp (and its affiliated companies), an independent service provider based in the United States which assists the Company with the preparation of tax forms and tax returns. In the future, the Company may select different service providers and share the Participant's Personal Data with such different service providers that serves the Company in a similar manner. The Company's service providers will open an account for the Participant to receive and trade Shares acquired under the Plan and that the Participant will be asked to agree on separate terms and data*

processing practices with the service provider, which is a condition of the Participant's ability to participate in the Plan. In addition to the foregoing service providers, the Company may transfer portions of the Participant's Personal Data related to the Participant's stock holdings to competent public authorities in connection with statutory audit reports and/or where required by law.

*(c) International Data Transfers. The Company and, as of the date hereof, any third parties assisting in the implementation, administration and management of the Plan, such as E*Trade Financial, are based in the United States. If the Participant is located outside the United States, the Participant's country may have enacted data privacy laws that are different from the laws of the United States. Where it is necessary to transfer the Participant's Personal Data to a different country to where the Participant is based, the Company has implemented appropriate safeguards to protect the Participant's Personal Data, including the execution of data transfer agreements with the recipient of the information. For further information, or a copy of, the adequate safeguards adopted by the Company, the Participant should contact the Participant's local human resources representative. The Company shall process any request in line with applicable law and the Company policy and procedures.*

(d) Data Retention. The Company will process the Participant's Personal Data only as long as is necessary to implement, administer and manage the Participant's participation in the Plan, or to comply with legal or regulatory obligations, including under tax and securities laws. In the latter case, the Participant understands and acknowledges that the Company's legal basis for the processing of the Participant's Personal Data would be compliance with the relevant laws or regulations. When the Company no longer needs the Participant's Personal Data for any of the above purposes, the Participant understands the Company will remove it from its systems.

*(e) Data Subject Rights**.** The Data subject rights regarding the processing of personal data vary depending on the applicable law and that, depending on where the Participant is based and subject to the conditions set out in the applicable law, the Participant may have, without limitation, the rights to (i) inquire whether and what kind of Personal Data the Company holds about the Participant and how it is processed, and to access or request copies of such Personal Data, (ii) request the correction or supplementation of Personal Data about the Participant that is inaccurate, incomplete or out- of-date in light of the purposes underlying the processing, (iii) obtain the erasure of Personal Data no longer necessary for the purposes underlying the processing, processed based on withdrawn consent, processed for legitimate interests that, in the context of the Participant's objection, do not prove to be compelling, or processed in non-compliance with applicable legal requirements, (iv) request the Company to restrict the processing of the Participant's Personal Data in certain situations where the Participant feels its processing is inappropriate, (v) object, in certain circumstances, to the processing of Personal Data for legitimate interests, and to (vi)request portability of the Participant's Personal Data that the Participant has actively or passively provided to the Company (which does not include data derived or inferred from the collected data), where the processing of such Personal Data is based on consent or the Participant's employment and is carried out by automated means. In case of concerns, the Participant may also have the right to lodge a complaint with the competent local data protection authority. Further, to receive clarification of, or to exercise any of, the Participant's rights the Participant should contact the Participant's local human resources representative.*

Language. The Participant acknowledges that he or she is proficient in the English language, or has consulted with an advisor who is sufficiently proficient in English, so as to allow the Participant to understand the terms and conditions of this Award Agreement. If the Participant receives the Award Agreement or any other document related to the Plan translated into a language other than English and if the meaning of the translated version is different than the English version, the English version will control.

AUSTRALIA

TERMS AND CONDITIONS

Tax Information. The Plan is a plan to which Subdivision 83A-C of the Income Tax Assessment Act 1997 (Cth) applies (subject to conditions in the Act).

NOTIFICATIONS

Securities Law Notification. If the Participant offers to sell the Shares acquired under the Plan to a person or entity resident in Australia, the offer may be subject to disclosure requirements under Australian law. The Participant should obtain legal advice regarding any applicable disclosure obligations before making any such offer.

Exchange Control Notification. Exchange control reporting is required for cash transactions exceeding A$10,000 and international fund transfers. If there is an Australian bank assisting with the transaction, the Australian bank will file the report for the Participant. If there is no Australian bank involved in the transaction, the Participant must file the report.

BELGIUM

NOTIFICATIONS

Tax Reporting Notification. The Participant must report any taxable income attributable to the Shares on the Participant's annual tax return.

Foreign Asset/Account Reporting Notification. The Participant must report securities held (including Shares) or any bank or brokerage accounts opened and maintained outside Belgium on the Participant's annual tax return. In a separate report, the Participant is required to report to the National Bank of Belgium the details of such accounts opened and maintained outside Belgium. This report, as well as additional information on how to complete it, can be found on the website of the National Bank of Belgium, www.nbb.be, under the Kredietcentrales / Centrales des crédits caption.

Stock Exchange Tax. A stock exchange tax applies to transactions executed by a Belgian resident through a non-Belgian financial intermediary, such as a U.S. broker. The stock exchange tax may apply when Shares acquired under the Plan are sold. The Participant should consult with his or her personal tax advisor for additional details on his or her obligations with respect to the stock exchange tax.

Brokerage Account Tax. A brokerage account tax applies to Belgian residents if the average annual value of securities (including Shares) held in a brokerage account exceeds certain thresholds. Belgian residents should consult with a personal tax or financial advisor for additional details on their obligations with respect to the brokerage account tax.

BRAZIL

TERMS AND CONDITIONS

Compliance with Law. By accepting the Award, the Participant agrees to comply with applicable Brazilian laws and pay any and all applicable taxes associated with the issuance of Shares in settlement of the Award, the subsequent sale of the Shares, and the receipt of any dividends.

Labor Law Acknowledgment. By accepting the Award, the Participant agrees that (i) he or she is making an investment decision, (ii) the Award is not part of the terms and conditions of the Participant's employment and (iii) the value of

the underlying Shares is not fixed and may increase or decrease in value over the vesting period without compensation to the Participant.

NOTIFICATIONS

Foreign Asset/Account Reporting Notification. If the Participant holds assets and rights outside Brazil with an aggregate value exceeding US$100,000, the Participant will be required to prepare and submit to the Central Bank of Brazil an annual declaration of such assets and rights, including: (i) bank deposits; (ii) loans; (iii) financing transactions; (iv) leases; (v) direct investments; (vi) portfolio investments, including Shares acquired under the Plan; (vii) financial derivatives investments; and (viii) other investments, including real estate and other assets. In addition, if the Participant holds such assets and rights outside Brazil with an aggregate value exceeding US$100,000,000, then quarterly reporting to the Central Bank of Brazil is required.

Please note that foreign individuals holding Brazilian visas are considered Brazilian residents for purposes of this reporting requirement and must declare at least the assets held abroad that were acquired subsequent to the date of admittance as a resident of Brazil. Individuals holding assets and rights outside Brazil valued at less than US$100,000 are not required to submit a declaration. Please note that the US$100,000 threshold may be changed annually.

Tax on Financial Transaction ("IOF"). Cross-border financial transactions relating to the Shares may be subject to the IOF (tax on financial transactions). The Participant should consult with his or her personal tax advisor for additional details.

CANADA

TERMS AND CONDITIONS

The following terms and conditions apply if the Participant is in Quebec:

Authorization to Release and Transfer Necessary Personal Information. The following provision supplements the "Data Privacy Consent" provision set forth above in this Addendum:

The Participant hereby authorizes the Company and the Company's representatives to discuss with and obtain all relevant information from all personnel, professional or not, involved in the administration and operation of the Plan. The Participant further authorizes the Company and/or any Affiliate to disclose and discuss the Plan with their advisors. The Participant further authorizes the Company and any Affiliate to record and keep such information in the Participant's employment file.

French Language Acknowledgment. The following provision supplements the "Language" provision set forth above in this Addendum:

The parties acknowledge that it is their express wish that this Award Agreement, as well as all documents, notices and legal proceedings entered into, given or instituted pursuant hereto or relating directly or directly hereto, be drawn up in English.

Les parties reconnaissent avoir exigé la rédaction en anglais de cette convention, ainsi que de tous documents, avis et procédures judiciaires, exécutés, donnés ou intentés en vertu de, ou liés directement ou indirectement à, la présente convention.

NOTIFICATIONS

Securities Law Notification. The Participant will not be permitted to sell or otherwise dispose of the Shares acquired under the Plan within Canada. The Participant will be permitted to sell or dispose of any Shares only if such sale or disposal takes place outside Canada through the facilities of the stock exchange on which the Shares are traded.

Foreign Asset/Account Reporting Notification. If the total cost of the Participant's foreign property (including cash held outside Canada and the Shares acquired under the Plan) exceeds C$100,000 at any time during the year, the Participant must report all of his or her foreign property on Form T1135 (Foreign Income Verification Statement). The cost of the Shares generally is the adjusted cost base ("ACB") of the Shares, which typically equals the fair market value of the Shares at the time of acquisition, but if the Participant owns other Shares, the ACB may have to be averaged with the ACB of the other Shares. The Participant should consult with his or her personal tax advisor to ensure compliance with any reporting requirements.

CHILE

NOTIFICATIONS

Securities Law Notification. This Award constitutes a private offering of securities in Chile effective as of the Grant Date. This offer is made subject to general ruling n° 336 of the Chilean Commission for the Financial Market ("CMF"). The offer refers to securities not registered at the securities registry or at the foreign securities registry of the CMF, and, therefore, such securities are not subject to oversight of the CMF. Given that the securities underlying this Award are not registered in Chile, the Company is not required to provide public information about the Award or the Shares in Chile. Unless the Award and/or the Shares are registered with the CMF, a public offering of such securities cannot be made in Chile.

El Beneficioconstituye una oferta privada de valores en Chile y se inicia en la Fecha de la Oferta. Esta oferta se acoge a las disposiciones de la Norma de Carácter General Nº 336 ("NCG 336") de la Comisión para el Mercado Financiero de Chile ("CMF"). Esta oferta versa sobre valores no inscritos en el Registro de Valores o en el Registro de Valores Extranjeros que lleva la CMF, por lo que tales valores no están sujetos a la fiscalización de ésta. Por tratarse de valores no inscritos en Chile no existe la obligación por parte de la Compañía de entregar en Chile información pública respecto de los mismos. Estos valores no podrán ser objeto de oferta pública en Chile mientras no sean inscritos en el Registro de Valores correspondiente.

Exchange Control Notification. The Participant is not required to repatriate funds obtained from the sale of Shares or the receipt of any dividends. However, if the Participant decides to repatriate such funds, the Participant must do so through the Formal Exchange Market ("*Mercado Cambiario Formal*") if the amount of the funds exceeds US$10,000. In such case, the Participant must report the payment to a commercial bank or registered foreign exchange office receiving the funds.

If the Participant's aggregate investments held outside Chile meets or exceeds US$5,000,000 (including the investments made under the Plan), the Participant must report the investments annually to the Central Bank ("*Banco Central de Chile*"), no later than 60 calendar days following the closing of the month of December. Annex 3.1 of Chapter XII of the Foreign Exchange Regulations must be used to file this report.

Please note that exchange control regulations in Chile are subject to change. The Participant should consult with his or her personal legal advisor regarding any exchange control obligations that the Participant may have.

Annual Tax Reporting Obligation. The Chilean Internal Revenue Service ("CIRS") requires Chilean residents to report the details of their foreign investments on an annual basis. Foreign investments include Shares acquired under the Plan. Further, if the Participant wishes to receive a credit against his or her Chilean income taxes for any taxes paid abroad, the Participant must also report the payment of taxes abroad to the CIRS. These reports must be submitted

electronically through the CIRS website at www.sii.cl in accordance with applicable deadlines. In addition, Shares acquired under the Plan must be registered with the CIRS's Foreign Investment Registry. The Participant should consult with his or her personal legal and tax advisors to ensure compliance with applicable requirements.

FRANCE

TERMS AND CONDITIONS

Award Not Tax-Qualified. The Participant understands that the Award is not intended to be French tax-qualified pursuant to Section L. 225-197 1 to L. 225-197 6 of the French Commercial Code, as amended.

Language Consent. By accepting the Award, the Participant confirms having read and understood the Plan and the Award Agreement, including all terms and conditions included therein, which were provided in the English language. Participant accepts the terms of those documents accordingly.

En acceptant ces <<Award>>, le Participant confirme avoir lu et compris le Plan et le convention, incluant tous leurs termes et conditions, qui ont été transmis en langue anglaise. Le Participant accepte les dispositions de ces documents en connaissance de cause.

NOTIFICATIONS

Foreign Asset/Account Reporting Notification. If the Participant holds securities (e.g., the Shares) or maintains a foreign bank account, this must be reported to the French tax authorities when filing his or her annual tax return, whether such accounts are open, current or closed. Failure to comply could trigger significant penalties. The Participant should consult with his or her personal tax advisor to ensure compliance with applicable reporting obligations.

GERMANY

NOTIFICATIONS

Exchange Control Notification. Cross-border payments in connection with the sale of securities or any dividends received in relation to Shares in excess of €12,500 must be reported monthly to the German Federal Bank. The Participant is responsible for satisfying the reporting obligation and must file the report electronically by the fifth day of the month following the month in which the payment is made. A copy of the form can be accessed via the German Federal Bank's website at www.bundesbank.de and is available in both German and English. No report is required for payments less than €12,500.

Foreign Asset/Account Reporting Notification. In the unlikely event that the Participant holds Shares exceeding 1% of the Company's total shares of common stock, the Participant must notify his or her local tax office of the acquisition of Shares if the acquisition costs for all Shares held by the Participant exceeds €150,000 or if the Participant holds 10% or more in the Company's total shares of common stock.

HONDURAS

There are no country-specific provisions.

INDIA

NOTIFICATIONS

Exchange Control Notification. The Participant understands that the Shares are subject to compliance with the exchange control requirements of the Reserve Bank of India. The Participant understands that he or she must repatriate and

convert into local currency the proceeds from the sale of Shares acquired under the Plan within ninety (90) days of receipt and any proceeds from dividends paid on Shares held within one-hundred eighty (180) days of receipt, or within other such period of time as may be required under applicable regulations. The Participant will receive a foreign inward remittance certificate ("FIRC") from the bank where the Participant deposits the foreign currency. The Participant should maintain the FIRC as evidence of the repatriation of funds in the event the Reserve Bank of India or the Employer requests proof of repatriation. The Participant should consult with his or her personal legal advisor to ensure compliance with the applicable requirements.

Foreign Asset/Account Reporting Notification. The Participant is required to declare any foreign bank accounts and foreign financial assets (including Shares held outside India) in the Participant's annual tax return. It is the Participant's responsibility to comply with this reporting obligation and the Participant should consult with his or her personal tax advisor in this regard.

INDONESIA

TERMS AND CONDITIONS

Language Consent and Notification. By accepting the Award, the Participant (i) confirms having read and understood the documents relating to this grant (*i.e.*, the Plan and the Award Agreement) which were provided in the English language, (ii) accepts the terms of those documents accordingly, and (iii) agrees not to challenge the validity of this document based on Law No. 24 of 2009 on National Flag, Language, Coat of Arms and National Anthem or the implementing Presidential Regulation (when issued).

Persetujuan dan Pemberitahuan Bahasa. Dengan menerima Penghargaan, Peserta (i) mengkonfirmasi bahwa dirinya telah membaca dan mengerti dokumen-dokumen yang terkait dengan pemberian ini (yaitu, Program dan Perjanjian Penghargaan) yang disediakan dalam Bahasa Inggris, (ii) menerima syarat-syarat dari dokumen-dokumen tersebut, dan (iii) setuju untuk tidak mengajukan keberatan atas keberlakuan dokumen ini berdasarkan Undang-Undang No. 24 Tahun 2009 tentang Bendera, Bahasa, dan Lambang Negara, Serta Lagu Kebangsaan atau Peraturan Presiden pelaksananya (ketika diterbitkan).

NOTIFICATIONS

Exchange Control Notification. Indonesian residents are obligated to provide Bank Indonesia with information on foreign exchange activities via a monthly report. Repatriation of proceeds from the sale of Shares or dividends back to Indonesia will trigger the reporting requirement. The report should be submitted online through Bank Indonesia's website no later than the 15th day of the month following the month in which the activity occurred.

In addition, if proceeds from the sale of Shares or dividends are repatriated to Indonesia, the Indonesian bank handling the transaction is responsible for submitting a report to Bank Indonesia. The Participant should be prepared to provide information, data and/or supporting documents upon request from the bank for purposes of preparing the report.

JAPAN

NOTIFICATIONS

Foreign Asset/Account Reporting Notification. The Participant is required to report details of any assets held outside Japan as of December 31, including Shares, to the extent such assets have a total net fair market value exceeding ¥50,000,000. Such report will be due from the Participant by March 15 each year. The Participant is responsible for complying with this reporting obligation and should consult with his or her personal tax advisor as to whether the Participant will be required to report the details of Shares he or she holds.

JORDAN

There are no country-specific provisions.

MALAYSIA

TERMS AND CONDITIONS

Data Privacy. The following provision replaces the "Data Privacy Consent" provision set forth above in this Addendum:

The Participant hereby explicitly, voluntarily and unambiguously consents to the collection, use and transfer, in electronic or other form, of his or her personal data as described in the Award Agreement and any other Plan participation materials by and among, as applicable, the Company, the Employer and any other Affiliate or any third parties authorized by same in assisting in the implementation, administration and management of the Participant's participation in the Plan.	***Peserta dengan ini secara jelas, secara sukarela dan tanpa sebarang keraguan mengizinkan pengumpulan, penggunaan dan pemindahan, dalam bentuk elektronik atau lain-lain, data peribadinya seperti yang dinyatakan dalam Perjanjian ini dan apa-apa bahan penyertaan Pelan oleh dan di antara, sebagaimana yang berkenaan, Syarikat, Penerima Perkhidmatan dan mana-mana Syarikat Induk atau Anak Syarikat lain atau mana-mana pihak ketiga yang diberi kuasa oleh yang sama untuk membantu dalam pelaksanaan, pentadbiran dan pengurusan penyertaan Pesertadalam Pelan tersebut.***
The Participant may have previously provided the Company and the Employer with, and the Company and the Employer may hold, certain personal information about the Participant, including, but not limited to, his or her name, home address, email address and telephone number, date of birth, social insurance number, passport or other identification number, salary, nationality, job title, any shares of stock or directorships held in the Company, the fact and conditions of the Participant's participation in the Plan, details of all entitlement to shares of stock awarded, cancelled, exercised, vested, unvested or outstanding in the Participant's favor ("Data"), for the exclusive purpose of implementing, administering and managing the Plan.	***Sebelum ini, Pesertamungkin telah membekalkan Syarikat dan Penerima Perkhidmatan dengan, dan Syarikat dan Majikan mungkin memegang, maklumat peribadi tertentu tentang Peserta, termasuk, tetapi tidak terhad kepada, namanya , alamat rumah dan nombor telefon, alamat emel, tarikh lahir, insurans sosia, nombor pasport atau pengenalan lain, gaji, kewarganegaraan, jawatan, apa-apa syer dalam saham atau jawatan pengarah yang dipegang dalam Syarikat, fakta dan syarat-syarat penyertaan Peserta dalam Pelan, butir-butir semua opsyenatau apa-apa hak lain untuk syer dalam saham yang dianugerahkan, dibatalkan, dilaksanakan, terletak hak, tidak diletak hak ataupun bagi faedah Peserta ("Data"), untuk tujuan yang eksklusif bagi melaksanakan, mentadbir dan menguruskan Pelan tersebut.***
The Participant also authorizes any transfer of Data, as may be required, to such stock plan service provider as may be selected by the Company from time to time, which is assisting the Company with the implementation, administration and management of the Plan and/or with whom any Shares acquired under the Plan are deposited. The Participant acknowledges that these recipients may be located in the Participant's country or elsewhere, and that the recipient's country (e.g., the United States) may have different data privacy laws and protections to the Participant's country, which may not give the same level of protection to Data. The Participant understands that he or she may request a list with the names and addresses of any potential recipients of Data by contacting his or her local human resources representative. The Participant authorizes the Company, the stock plan service provider and any other possible recipients which may assist the Company (presently or in the future) with implementing, administering and managing the Participant's participation in the Plan to receive,	***Peserta juga memberi kuasa untuk membuat apa-apa pemindahan Data, sebagaimana yang diperlukan, kepada pembekal perkhidmatan pelan saham sebagaimana yang dipilih oleh Syarikatdari semasa ke semasa, yang membantu Syarikat dalam pelaksanaan, pentadbiran dan pengurusan Pelandan/atau dengan sesiapa yang mendepositkan Saham yang diperolehi melalui pelaksanaan Opsyen ini. Peserta mengakui bahawa penerima-penerima ini mungkin berada di negara Peserta atau di tempat lain, dan bahawa negara penerima (contohnya, Amerika Syarikat) mungkin mempunyai undang-undang privasi data dan perlindungan yang berbeza daripada negaraPeserta, yang mungkin tidak boleh memberi tahap perlindungan yang sama kepada Data. Peserta faham bahawa dia boleh meminta senarai nama dan alamat mana-mana penerima Data dengan menghubungi wakil sumber manusia tempatannya. Peserta memberi kuasa kepada Syarikat, pembekal perkhidmatan pelan saham dan mana-mana penerima lain yang mungkin membantu Syarikat (masa sekarang atau pada masa depan) untuk melaksanakan, mentadbir dan menguruskan penyertaan Peserta dalam Pelan untuk menerima, memiliki, menggunakan,***

possess, use, retain and transfer Data, in electronic or other form, for the sole purpose of implementing, administering and managing the Participant's participation in the Plan. The Participant understands that Data will be held only as long as is necessary to implement, administer and manage his or her participation in the Plan. The Participant understands that he or she may, at any time, view Data, request additional information about the storage and processing of Data, require any necessary amendments to Data or refuse or withdraw the consents herein, in any case, without cost, by contacting in writing his or her local human resources representative, whose contact details are: ***No 8, Jalan Hi-Tech 3/3*** ***Zon Indusrtri Fasa 3, Kulim Hi Tech Park*** ***09000, Kulim, Kedah Darul Aman Malaysia*** ***Further, the Participant understands that he or she is providing the consents herein on a purely voluntary basis. If the Participant does not consent, or if the Participant later seeks to revoke the consent, his or her status and career with the Company and the Employer will not be adversely affected; the only adverse consequence of refusing or withdrawing the consent is that the Company would not be able to grant future equity awards to the Participant or administer or maintain such awards. Therefore, the Participant understands that refusing or withdrawing his or her consent may affect his or her ability to participate in the Plan. For more information on the consequences of the refusal to consent or withdrawal of consent, the Participant understands that he or she may contact his or her local human resources representative.***	***mengekalkan dan memindahkan Data, dalam bentuk elektronik atau lain-lain, semata-mata dengan tujuan untuk melaksanakan, mentadbir dan menguruskan penyertaan Peserta dalam Pelan tersebut. Peserta faham bahawa Data akan dipegang hanya untuk tempoh yang diperlukan untuk melaksanakan, mentadbir dan menguruskan penyertaannya dalam Pelan tersebut. Peserta faham bahawa dia boleh, pada bila-bila masa, melihat data, meminta maklumat tambahan mengenai penyimpanan dan pemprosesan Data, meminta bahawa pindaan-pindaan dilaksanakan ke atas Data atau menolak atau menarik balik persetujuan dalam ini, dalam mana-mana kes, tanpa kos, dengan menghubungi secara bertulis wakil sumber manusia di lokasi masing-masing, di mana butir-butir hubungannya adalah:*** ***No 8, Jalan Hi-Tech 3/3*** ***Zon Indusrtri Fasa 3, Kulim Hi Tech Park*** ***09000, Kulim, Kedah Darul Aman Malaysia*** ***Selanjutnya, Peserta memahami bahawa dia memberikan persetujuan di sini secara sukarela. Jika Peserta tidak bersetuju, atau jika Peserta kemudian membatalkan persetujuannya , status sebagai Pemberi Perkhidmatan dan kerjayanya dengan Penerima Perkhidmatan tidak akan terjejas; satunya akibat buruk jika dia tidak bersetuju atau menarik balik persetujuannya adalah bahawa Syarikat tidak akan dapat memberikan opsyen pada masa depan atau anugerah ekuiti lain kepada Peserta atau mentadbir atau mengekalkan anugerah tersebut. Oleh itu, Peserta faham bahawa keengganan atau penarikan balik persetujuannya boleh menjejaskan keupayaannya untuk mengambil bahagian dalam Pelan tersebut. Untuk maklumat lanjut mengenai akibat keengganannya untuk memberikan keizinan atau penarikan balik keizinan,Peserta fahami bahawa dia boleh menghubungi wakil sumber manusia tempatannya.***

NOTIFICATIONS

Director Notification Obligation. If the Participant is a director of an Affiliate, the Participant is subject to certain notification requirements under the Malaysian Companies Act, 2016. Among these requirements is an obligation on the Participant's part to notify the Malaysian Affiliate in writing when the Participant acquires an interest (e.g., Shares) in the Company or any related companies. In addition, the Participant must notify the Malaysian Affiliate when the Participant sells Shares (including Shares acquired under the Plan) or the shares of any related company. These notifications must be made within 14 days of acquiring or disposing of any interest in the Company or any related company.

MEXICO

TERMS AND CONDITIONS

Labor Law Acknowledgment. By accepting the Award, the Participant acknowledges that he or she understands and agrees that: (a) the Award is not related to the salary and other contractual benefits provided to the Participant by the Employer; and (b) any modification of the Plan or its termination shall not constitute a change or impairment of the terms and conditions of the Participant's employment.

Policy Statement. The invitation the Company is making under the Plan is unilateral and discretionary and, therefore, the Company reserves the absolute right to amend it and discontinue it at any time without any liability to the Participant.

The Company, with registered offices at 350 West Washington Street, Suite 600, Tempe, Arizona 85281, United States of America is solely responsible for the administration of the Plan and participation in the Plan or the acquisition of Shares does not, in any way, establish an employment relationship between the Participant and the Company since the Participant is participating in the Plan on a wholly commercial basis and the sole employer is a Mexican legal entity that employs the Participant and to which he/she is subordinated, nor does it establish any rights between the Participant and the Employer.

Plan Document Acknowledgment. By accepting the Award, the Participant acknowledges that he or she has received a copy of the Plan, has reviewed the Plan and the Award Agreement in their entirety and fully understands and accepts all provisions of the Plan and the Award Agreement.

The Participant further acknowledges that having read and specifically and expressly approved the terms and conditions in the Section 5 of the Award Agreement, in which the following is clearly described and established: (a) participation in the Plan does not constitute an acquired right; (b) the Plan and participation in the Plan is offered by the Company on a wholly discretionary basis; (c) participation in the Plan is voluntary; and (d) the Company and its Affiliates are not responsible for any decrease in the value of the Shares underlying the Award.

Finally, the Participant does not reserve any action or right to bring any claim against the Company for any compensation or damages as a result of participation in the Plan and the Participant therefore grants a full and broad release to the Employer and the Company (including its Affiliates) with respect to any claim that may arise under the Plan.

Spanish Translation

Reconocimiento de la Ley Laboral. Al aceptar el Beneficio, el Beneficiario reconoce y acepta que: (a) el Beneficio no se encuentra relacionado con su salario ni con otras prestaciones contractuales concedidas por parte del Patrón; y (b) cualquier modificación del Plan o su terminación no constituye un cambio o impedimento de los términos y condiciones del empleo del Beneficiario.

Declaración de la Política. La invitación que hace la Compañía bajo el Plan es unilateral y discrecional, por lo que la Compañía se reserva el derecho absoluto de modificar e interrumpir el mismo en cualquier tiempo, sin ninguna responsabilidad para el Beneficiario.

La Compañía, con oficinas ubicadas en 350 West Washington Street, Suite 600, Tempe, Arizona 85281, United States of America, es la única responsable por la administración y la participación en el Plan, así como de la adquisición de acciones, por lo que de ninguna manera podrá establecerse una relación de trabajo entre el Beneficiario y la Compañía, ya que el Beneficiario participa únicamente en de forma comercial y que su único patrón lo es Patrón es una empresa legal Mexicana a quien se encuentra subordinado; la participación en el Plan tampoco genera ningún derecho entre el Beneficiario y el Patrón.

Reconocimiento del Plan de Documentos. Al aceptar el Beneficio, el Beneficiario reconoce que ha recibido una copia del Plan, que lo ha revisado junto con el Convenio, y que ha entendido y aceptado completamente las disposiciones contenidas en el Plan y en el Convenio.

Adicionalmente, al firmar el presente documento, el Beneficiario reconoce que ha leído y aprobado de manera expresa y específica los términos y condiciones contenidos en el apartado 5 del Convenio, el cual claramente establece y describe: (a) que la participación en el Plan no constituye un derecho adquirido; (b) que el Plan y la participación en el mismo es ofrecido por la Compañía en forma totalmente discrecional; (c) que la participación en el Plan es voluntaria; y (d) que la Compañía, así como sus Afiliadas no son responsables por cualquier detrimento en el valor de las acciones que integran el Beneficio.

Finalmente, el Beneficiario acepta no reservarse ninguna acción o derecho para interponer una demanda en contra de la Compañía por compensación, daño o perjuicio alguno como resultado de su participación en el Plan y en

consecuencia, otorga al Patrón el más amplio y completo finiquito que en derecho proceda, así como a la Compañía y sus Afiliadas, respecto a cualquier demanda que pudiera originarse derivada del Plan.

NETHERLANDS

TERMS AND CONDITIONS

Labor Law Acknowledgment. By accepting the Award, the Participant acknowledges that: (i) the Award is intended as an incentive to remain employed with the Employer and is not intended as remuneration for labor performed; and (ii) the Award is not intended to replace any pension rights or compensation.

PHILIPPINES

NOTIFICATIONS

Securities Law Information. This offering is subject to exemption from the requirements of securities registration with the Philippines Securities and Exchange Commission, under Section 10.1 (k) of the Philippine Securities Regulation Code. Section 10.1(k) of the Philippine Securities Regulation Code provides as follows:

"Section 10.1 Exempt Transactions – The requirement of registration under Subsection 8.1 shall not apply to the sale of any security in any of the following section;

[. . .]

"(k) The sale of securities by an issuer to fewer than twenty (20) persons in the Philippines during any twelve-month period."

THE SECURITIES BEING OFFERED OR SOLD HAVE NOT BEEN REGISTERED WITH THE SECURITIES AND EXCHANGE COMMISSION UNDER THE SECURITIES REGULATION CODE. ANY FURTHER OFFER OR SALE THEREOF IS SUBJECT TO REGISTRATION REQUIREMENTS UNDER THE CODE UNLESS SUCH OFFER OR SALE QUALIFIES AS AN EXEMPT TRANSACTION.

The Participant acknowledges he or she is permitted to dispose or sell Shares acquired under the Plan provided the offer and resale of the Shares takes place outside the Philippines through the facilities of a stock exchange on which the Shares are listed. The Shares are currently listed on the NASDAQ Global Select Market in the United States of America.

SINGAPORE

NOTIFICATIONS

Securities Law Notification. The Award being granted to the Participant pursuant to the "Qualifying Person" exemption under section 273(1)(f) of the Singapore Securities and Futures Act (Chapter 289, 2006 Ed.) ("SFA"). The Plan has not been lodged or registered as a prospectus with the Monetary Authority of Singapore. The Participant should note that the Award is subject to section 257 of the SFA and the Participant will not be able to make any subsequent sale in Singapore, or any offer of such subsequent sale of the Shares underlying the Award, unless such sale or offer in Singapore is made (i) more than six months from the Grant Date, (ii) pursuant to the exemptions under Part XIII Division (1) Subdivision (4) (other than section 280) of the SFA, or (iii) pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA. The Shares are currently traded on the NASDAQ Global Select Market, which is located outside Singapore, and Shares acquired under the Plan may be sold through this exchange.

NOTIFICATIONS

Chief Executive Officer/Director Notification Requirement. If the Participant is a Chief Executive Officer ("CEO") director, associate director or shadow director of a Singaporean Affiliate, the Participant is subject to certain notification requirements under the Singapore Companies Act. Among these requirements is an obligation to notify the Singapore Affiliate in writing of an interest (*e.g.*, the Award) in the Company or any Affiliate within two (2) business days of (i) its acquisition or disposal, (ii) any change in previously disclosed interest (*e.g.*, when Shares are sold), or (iii) becoming the CEO or a director, associate director or shadow director.

THAILAND

NOTIFICATIONS

Exchange Control Notification. Thai resident Participants realizing US$50,000 or more in a single transaction from the sale of Shares must repatriate the proceeds to Thailand and then convert such proceeds to Thai Baht within 360 days of repatriation or deposit the proceeds into a foreign currency account opened with any commercial bank in Thailand. If the amount of the Participant's proceeds is US$50,000 or more, the Participant provide details of the transaction (*i.e.*, identification information and purpose of the transaction) to the receiving bank. If the Participant fails to comply with these obligations, the Participant may be subject to penalties assessed by the Bank of Thailand. The Participant should consult his or her personal advisor before taking action with respect to remittance of proceeds from the sale of Shares into Thailand. The Participant is responsible for ensuring compliance with all exchange control laws in Thailand.

TURKEY

NOTIFICATIONS

Securities Law Notification. Under Turkish law, the Participant is not permitted to sell any Shares acquired under the Plan in Turkey. The Shares are currently traded on the NASDAQ Global Select Market, which is located outside Turkey, under the ticker symbol "FSLR" and the Shares may be sold through this exchange.

Exchange Control Notification. Turkish residents are permitted to purchase and sell securities or derivatives traded on exchanges abroad only through a financial intermediary licensed in Turkey. Therefore, the Participant may be required to appoint a Turkish broker to assist the Participant with the sale of the Shares acquired under the Plan. The Participant should consult his or her personal legal advisor before selling any Shares acquired under the Plan to confirm the applicability of this requirement to the Participant.

UNITED ARAB EMIRATES ("UAE")

NOTIFICATIONS

Securities Law Notification. The Shares are available only for select employees of the Company and its Affiliates and is in the nature of providing employee incentives in the UAE. This Award Agreement, the Addendum, the Plan and other incidental communication materials are intended for distribution only to eligible employees for the purposes of an employee compensation or reward scheme, and must not be delivered to, or relied on, by any other person.

The Dubai Creative Clusters Authority, Emirates Securities and Commodities Authority and/or the Central Bank of the United Arab Emirates has no responsibility for reviewing or verifying any documents in connection with the Shares or this Award Agreement. Further, neither the Ministry of Economy nor the Dubai Department of Economic Development have approved this Award Agreement nor taken steps to verify the information set out in it, and have no responsibility for it.

The securities to which this Award Agreement relates may be illiquid and/or subject to restrictions on their resale. Individuals should conduct their own due diligence on the securities.

Residents of the UAE who do not understand or have questions regarding this Award Agreement, the Addendum or the Plan should consult an authorized financial adviser.

EXHIBIT 10.46

Form Perf Unit-010

Performance Unit Award Agreement under the First Solar, Inc. 2015 Omnibus Incentive Compensation Plan, between First Solar, Inc. (the "Company"), a Delaware corporation, and the individual (the "Participant") set forth on the Grant Notice which incorporates this Form Perf Unit-010 by reference.

This Performance Share Unit Award Agreement including any addendum or exhibits hereto and the Grant Notice (collectively, this "Award Agreement") set forth the terms and conditions of an award of Performance Units (this "Award") that is being granted to the Participant set forth on the Grant Notice on the date set forth in the Grant Notice (such date, the "Grant Date"), under the terms of the First Solar, Inc. 2015 Omnibus Incentive Compensation Plan (the "Plan") for the number of performance units set forth in the Grant Notice. Each Performance Unit constitutes an unfunded and unsecured promise of the Company to deliver (or cause to be delivered) to the Participant one share of the common stock of the Company (a "Share"), subject to the all terms and conditions of this Award Agreement, the Grant Notice, and the Plan, including without limitation, THE DISPUTE RESOLUTION PROVISIONS SET FORTH IN SECTION 14 OF THIS AWARD AGREEMENT.

* * *

SECTION 1. **The Plan**. This Award is made pursuant to the Plan, all the terms of which are hereby incorporated in this Award Agreement. In the event of any conflict between the terms of the Plan, on the one hand, and the terms of this Award Agreement, on the other hand, the terms of the Plan shall govern.

SECTION 2. **Definitions**. The following terms are defined in this Award Agreement, and shall when capitalized have the meaning ascribed to them in this Award Agreement in the locations set forth below.

Defined Term	Cross-Ref.	Defined Term	Cross-Ref.
"Addendum"	Section 18	"Employer"	Section 6
"Affiliate"	Section 3(a)	"Grant Date"	Paragraph 2
"Award"	Paragraph 2	"Participant"	Paragraph 1
"Award Agreement"	Paragraph 2	"Performance Unit"	Paragraph 2
"Business Day"	Section 15	"Plan"	Paragraph 2
"Committee"	Section 3(a)	"Share"	Paragraph 2
"Company"	Paragraph 1	"Tax-Related Items"	Section 6

Capitalized terms that are not defined in this Award Agreement shall have the meanings used or defined in the Plan or in the Grant Notice.

SECTION 3. Vesting, Forfeiture, and Delivery of Shares.

(a) Vesting. The Grant Notice specifies the Performance-Vesting Conditions required to be attained during the Performance Period for the Performance Units to vest. The Award shall vest on the date the Compensation Committee of the Company's Board of Directors (the "Committee") certifies attainment of the Performance-Vesting Conditions set forth in the Grant Notice have been attained provided that the Participant is actively employed by the Company or an Affiliate on the measurement date as of which the Performance-Vesting Conditions are certified or such earlier date set forth in the Grant Notice. For purposes of this Award Agreement, an "Affiliate" of the Company is an individual or entity that directly, or indirectly through one or more intermediaries, controls, or is controlled by, or is under common control with, the Company.

(b) Forfeiture. Unless the Committee determines otherwise, or unless otherwise provided in the Grant Notice, a written agreement between the Company and the Participant or any other plan, policy or program of the Company then in effect, the Participant's rights with respect to this Award shall immediately terminate, and the Participant will not be entitled to receive any Shares or any other payments or benefits with respect thereto upon termination of the Participant's employment or service relationship with the Company and/or its Affiliates for any reason (as further described in Section 8(l) below).

(c) Delivery of Shares. Upon vesting of the Award, the Shares shall be delivered to the Participant in settlement of the vested Performance Units in accordance with the Settlement Section of the Grant Notice.

SECTION 4. Voting Rights; Dividend Equivalents. The Participant shall not be entitled to exercise any voting rights with respect to a Performance Unit and shall not be entitled to receive dividends, dividend equivalents or other distributions with respect to the Shares underlying such Performance Units prior to the date on which the Participant's rights with respect to the Performance Units have become vested and Shares are delivered to the Participant.

SECTION 5. Non-Transferability of Performance Units. Unless otherwise provided by the Committee in its discretion, Performance Units may not be sold, assigned, alienated, transferred, pledged, attached or otherwise encumbered by the Participant. Any purported sale, assignment, alienation, transfer, pledge, attachment or other encumbrance of a Performance Unit in violation of the provisions of this Section 5 shall be void.

SECTION 6. Responsibility for Taxes.

(a) Regardless of any action the Company or the Participant's employer, if other than the Company (the "Employer"), takes with respect to any or all federal, state or local income tax, social security contributions, payroll tax, payment on account or other tax-related items related to the Participant's participation in the Plan that are legally applicable to the Participant ("Tax-Related Items"), the Participant acknowledges that the ultimate liability for all Tax-Related Items is and remains the Participant's responsibility and that such liability may exceed the amount actually withheld by the Company or the Employer. The Participant further acknowledges that the Company and/or the Employer (i) make no representations or undertakings regarding the treatment of any Tax-Related Items in connection with any aspect of the Performance Units, including, without limitation, the grant, vesting or settlement of the Performance Units, the issuance of Shares on the relevant settlement date, the subsequent sale of Shares acquired pursuant to such issuance and the receipt of any dividends; and (ii) do not commit to and are under no obligation to structure the terms of the Award or any aspect of the Performance Units to reduce or eliminate the Participant's liability for Tax-Related Items or achieve any particular tax result. Further, if the Participant becomes subject to tax and/or social security contributions in more than one jurisdiction, the Participant acknowledges that the Company and/or the Employer (or former employer, as applicable) may be required to withhold or account for Tax-Related Items in more than one jurisdiction.

(b) Prior to any relevant taxable, tax and/or social security contribution withholding event, the Participant shall pay or make adequate arrangements satisfactory to the Company and/or the Employer to satisfy all Tax-Related Items. In this regard, the Participant authorizes the Company or its agent to satisfy any applicable withholding obligations

with regards to Tax-Related Items by withholding from the number of Performance Units payable to the Participant under this Award Agreement and the Grant Notice a number of Shares to be issued upon settlement of the Performance Units. If, for any reason, the Shares that would otherwise be deliverable to the Participant upon settlement of the Performance Units would be insufficient to satisfy the tax withholding obligations, or if such withholding in Shares is problematic under applicable tax or securities law or has materially adverse accounting consequences, the Participant authorizes (i) the Company and any brokerage firm determined acceptable to the Company to sell on the Participant's behalf a whole number of Shares from those Shares to be issued to the Participant as the Company determines to be appropriate to generate cash proceeds sufficient to satisfy any applicable withholding obligations for Tax-Related Items (ii) the Company, the Employer and any Affiliate to withhold an amount from the Participant's wages or other compensation or require the Participant to make a cash payment sufficient to fully satisfy any applicable withholding obligations for Tax-Related Items.

(c) Depending on the withholding method, the Company may withhold or account for Tax-Related Items by considering applicable minimum statutory withholding amounts or other applicable withholding rates, including maximum withholding rates, in which case the participant will receive a refund of any over-withheld amount in cash and will have no entitlement to the equivalent in Shares. If the obligation for Tax-Related Items is satisfied by withholding in Shares, the Participant is deemed, for tax and/or social security contributions and other purposes, to have been issued the full number of Shares subject to the vested Performance Units, notwithstanding that a number of Shares are held back solely for the purposes of paying the Tax-Related Items due as a result of any aspect of the Participant's participation in the Plan.

(d) The Participant shall pay to the Company or the Employer any amount of Tax-Related Items that the Company or the Employer may be required to withhold or account for as a result of the Participant's participation in the Plan that cannot be satisfied by the means previously described. The Participant expressly acknowledges that the delivery of Shares pursuant to Section 3(c) above is conditioned on satisfaction of all Tax-Related Items in accordance with this Section 6, and that the Company may refuse to deliver the Shares if the Participant fails to comply with the Participant's obligations in connection with the Tax-Related Items.

SECTION 7. Consents and Legends.

(a) Consents. The Participant's rights in respect of the Performance Units are conditioned on the receipt to the full satisfaction of the Committee of any required consents that the Committee may determine to be necessary or advisable (including, without limitation, the Participant's consent to the Company's supplying to any third-party recordkeeper of the Plan such personal information as the Committee deems advisable to administer the Plan, as may further be described to the extent applicable discussing applicable data privacy considerations in an addendum to this Award Agreement, as described in Section 18).

(b) Legends. The Company may affix to certificates for Shares issued pursuant to this Award Agreement any legend that the Committee determines to be necessary or advisable (including to reflect any restrictions to which the Participant may be subject under any applicable securities laws). The Company may advise the applicable transfer agent to place a stop order against any legended Shares.

SECTION 8. Nature of Award. As a condition to the receipt of this Award, the Participant acknowledges, understands and agrees that:

(a) the Plan is established voluntarily by the Company, is discretionary in nature and may be modified, amended, suspended or terminated by the Company at any time, unless otherwise provided in the Plan and this Award Agreement;

(b) this Award is exceptional, voluntary and occasional and does not create any contractual or other right to receive future awards of Performance Units, or benefits in lieu of Performance Units, even if Performance Units have been granted repeatedly in the past;

(c) all decisions with respect to future awards of Performance Units, if any, will be at the sole discretion of the Company;

(d) the Participant's participation in the Plan shall not create a right to further employment with the Employer and shall not interfere with the ability of the Employer to terminate the Participant's employment relationship at any time;

(e) the Participant's participation in the Plan is voluntary;

(f) the Performance Units and the Shares subject to the Performance Units are extraordinary items that do not constitute compensation of any kind for services of any kind rendered to the Company or the Employer, and which are outside the scope of the Participant's employment agreement, if any, unless such agreement is directly with the Company and specifically provides to the contrary;

(g) the Performance Units and the Shares subject to the Performance Units, and the income from and value thereof, are not intended to replace any pension rights or compensation;

(h) the Performance Units and the Shares subject to the Performance Units, and the income and value of same, are not part of normal or expected compensation or salary for any purposes, including, without limitation, calculating any severance, resignation, termination, redundancy, dismissal, end-of-service payments, bonuses, long-service awards, holiday pay, pension or retirement or welfare benefits or similar payments and in no event should be considered as compensation for, or relating in any way to, past services for the Company, the Employer, or any Affiliate;

(i) this Award and the Participant's participation in the Plan will not be interpreted to form or amend an employment or service agreement or relationship with the Company or any Affiliate;

(j) the future value of the underlying Shares is unknown and cannot be predicted with certainty;

(k) no claim or entitlement to compensation or damages shall arise from forfeiture of the Performance Units resulting from termination of the Participant's employment or other service relationship by the Company or the Employer (for any reason whatsoever, whether or not later found to be invalid or in breach of employment laws in the jurisdiction where Participant is employed or the terms of Participant's employment agreement, if any);

(l) except as otherwise provided by the Committee or the Grant Notice, in the event of termination of the Participant's employment or service relationship, the Participant's right to vest in the Performance Units under the Plan, if any, will terminate effective as of the date the Participant is no longer actively providing services to the Company, the Employer or any Affiliate of the Company (regardless of the reason for such termination and whether or not later found to be invalid or in breach of employment laws in the jurisdiction where the Participant is employed or the terms of the Participant's employment agreement, if any), and unless otherwise expressly provided in this Award Agreement or determined by the Company, the Participant's right to vest in the Performance Units under the Plan, if any, will terminate as of such date and will not be extended by any notice period (*e.g.*, the Participant's period of service would not include any contractual notice period or any period of "garden leave" or similar period mandated under employment laws in the jurisdiction where the Participant is employed or the terms of the Participant's employment agreement, if any); the Committee shall have the exclusive discretion to determine when the Participant is no longer actively providing services for purposes of the Performance Units (including whether the Participant may still be considered to be providing services while on a leave of absence);

(m) unless otherwise agreed with the Company, Performance Units and Shares subject to the Performance Units, and the income from and value of same, are not granted as consideration for, or in connection with, the service Participant may provide as a director of an Affiliate;

(n) the Performance Units and the benefits under the Plan, if any, will not automatically transfer to a successor company in the case of a Change in Control or a merger, takeover, or transfer of liability of the Employer; and

(o) neither the Company nor the Employer or any Affiliate shall be liable for any foreign exchange rate fluctuation between the Participant's local currency and the United States Dollar that may affect the value of the Award or of any amounts due to the Participant for the settlement of the Performance Units or the subsequent sale of any Shares acquired upon settlement.

SECTION 9. **No Advice Regarding Grant**. Nothing in this Award Agreement should be viewed as the provision by the Company of any tax, legal, or financial advice, nor is the Company making any recommendations regarding the Participant's participation in the Plan, or the Participant's acquisition or sale of the underlying Shares. The Participant understands and agrees that the Participant should consult with the Participant's own personal tax, legal and financial advisors regarding the Participant's participation in the Plan before taking any action in relation thereto.

SECTION 10. **Adjustments**. Without limiting Section 4(b) of the Plan, in the event of any change in the outstanding Shares by reason of any stock split, stock dividend, split-up, split-off, spin-off, recapitalization, merger, consolidation, rights offering, reorganization, combination or exchange of shares, sale by the Company of all or part of its assets, distribution to shareholders other than a normal cash dividend, or other extraordinary or unusual event occurring after the Grant Date and prior to the end of the settlement date, that affects the value of the Performance Units or Shares, the number, class and kind of the securities subject to the Performance Units, or the number of Performance Units, or the Performance-Vesting Conditions, as appropriate, shall be adjusted by the Committee to reflect the occurrence of such event.

SECTION 11. **Electronic Delivery**. The Company may, in its sole discretion, decide to deliver any documents related to current or future participation in the Plan by electronic means. Receipt of this Award is conditioned upon the Participant's consent to such electronic delivery and the Participant's agreement to participate in the Plan through an online or electronic system established and maintained by the Company or a third party designated by the Company.

SECTION 12. **Successors and Assigns of the Company**. The terms and conditions of this Award Agreement shall be binding upon and shall inure to the benefit of the Company and its successors and assigns.

SECTION 13. **Committee Discretion**. The Committee shall have full and plenary discretion with respect to any actions to be taken or determinations to be made in connection with this Award Agreement, and its determinations shall be final, binding and conclusive.

SECTION 14. **Dispute Resolution**.

(a) Jurisdiction and Venue. Notwithstanding any provision in any employment agreement between the Participant and the Company or any Affiliate, the Participant and the Company hereby irrevocably submit to the exclusive jurisdiction of (i) the United States District Court for the District of Delaware and (ii) the courts of the State of Delaware for the purposes of any action, suit or other proceeding arising out of this Award Agreement or the Plan. The Participant and the Company agree to commence any such action, suit or proceeding either in the United States District Court for the District of Delaware or, if such action, suit or other proceeding may not be brought in such court for jurisdictional reasons, in the courts of the State of Delaware. The Participant and the Company further agree that service of any process, summons, notice or document by U.S. registered mail (or its equivalent in the Participant's country of residence) to the applicable address set forth in Section 15 below shall be effective service of process for any action, suit or proceeding in Delaware with respect to any matters to which the Participant has submitted to jurisdiction in this Section 14(a). The Participant and the Company irrevocably and unconditionally waive any objection to the laying of venue of any action, suit or proceeding arising out of this Award Agreement or the Plan in (A) the United States District Court for the District of Delaware, or (B) the courts of the State of Delaware, and hereby and thereby further irrevocably and

unconditionally waive and agree not to plead or claim in any such court that any such action, suit or proceeding brought in any such court has been brought in an inconvenient forum.

(b) Waiver of Jury Trial. Notwithstanding any provision in the Participant's employment agreement, if any, between the Participant and the Company, the Participant and the Company hereby waive, to the fullest extent permitted by applicable law, any right either may have to a trial by jury in respect to any litigation directly or indirectly arising out of, under or in connection with this Award Agreement or the Plan.

(c) Confidentiality. The Participant hereby agrees to keep confidential the existence of, and any information concerning, a dispute described in this Section 14, except that the Participant may disclose information concerning such dispute to the court that is considering such dispute or to the Participant's legal counsel (provided that such counsel agrees not to disclose any such information other than as necessary to the prosecution or defense of the dispute).

SECTION 15. Notice. All notices, requests, demands and other communications required or permitted to be given under the terms of this Award Agreement shall be in writing and shall be deemed to have been duly given when delivered by hand or overnight courier or three Business Days after they have been mailed by U.S. registered mail (or its equivalent in the Participant's country of residence), return receipt requested, postage prepaid, addressed to the other party as set forth below:

If to the Company:	First Solar, Inc. 350 W Washington Street, Suite 600 Tempe, AZ 85281 Attention: Stock Plan Administrator
If to the Participant:	To the address most recently supplied to the Company and set forth in the Company's records

The parties may change the address to which notices under this Award Agreement shall be sent by providing written notice to the other in the manner specified above. For this purpose, "Business Day" means a day that is not a Saturday, a Sunday or a day on which banking institutions are legally permitted to be closed in Phoenix, Arizona, U.S.

SECTION 16. Governing Law. This Award Agreement shall be deemed to be made in the State of Delaware, and the validity, construction and effect of this Award Agreement in all respects shall be determined in accordance with the laws of the State of Delaware, without giving effect to the conflict of law principles thereof.

SECTION 17. Headings. Headings are given to the Sections and subsections of this Award Agreement solely as a convenience to facilitate reference. Such headings shall not be deemed in any way material or relevant to the construction or interpretation of this Award Agreement or any provision thereof.

SECTION 18. Country-Specific or Other Addenda.

(a) Notwithstanding any provisions in this Award Agreement or the Plan, this Award shall be subject to such special terms and conditions set forth in any Addendum attached hereto ("Addendum") or as may later become applicable, as described herein.

(b) If the Participant becomes subject to the laws of a jurisdiction to which an Addendum applies, the special terms and conditions for such jurisdiction will apply to this Award to the extent the Committee determines that the application of such terms and conditions is necessary or advisable to comply with local laws or to facilitate the

administration of the Plan; provided the imposition of the term or condition will not result in any adverse accounting expense with respect to the Award.

(c) Any Addendum attached hereto shall be considered a part of this Award Agreement.

SECTION 19. **Severability**. The provisions of this Award Agreement are severable, and, if any one or more provisions are determined to be illegal or otherwise unenforceable, in whole or in part, the remaining provisions nevertheless shall be binding and enforceable.

SECTION 20. **Amendment of this Award Agreement**. The Committee may waive any conditions or rights under, amend any terms of, or alter, suspend, discontinue, cancel or terminate this Award Agreement prospectively or retroactively; provided, however, that any such waiver, amendment, alteration, suspension, discontinuance, cancellation or termination that would materially and adversely impair the Participant's rights under this Award Agreement shall not, to the extent of such impairment, be effective without the Participant's consent (it being understood, notwithstanding the foregoing proviso, that this Award Agreement and the Performance Units shall be subject to the provisions of Section 7(c) of the Plan).

SECTION 21. **Imposition of Other Requirements**. The Company reserves the right to impose other requirements on the Participant's participation in the Plan, on the Performance Units and on any Shares acquired under this Award, to the extent that the Company determines it is necessary or advisable to comply with local law or facilitate the administration of the Plan, and to require the Participant to sign any additional agreements or undertakings that may be necessary to accomplish the foregoing.

SECTION 22. **Award Conditioned On Terms and Conditions for Performance Units**. As a condition to receipt of this Award, the Participant confirms that he/she has read and understood the documents relating to this Award (*i.e.*, the Plan, this Award Agreement, including any Addendum) and accepts the terms of those documents accordingly.

SECTION 23. **Counterparts**. Where signature of this Award Agreement is contemplated in the Grant Notice or any Addendum, this Award Agreement may be signed in counterparts, with the same effect as if the signatures thereto and hereto were upon the same instrument.

SECTION 24. **Code Section 409A**. The vesting and settlement of Performance Units awarded pursuant to this Award Agreement are intended to either qualify for the "short-term deferral" exemption from Section 409A of the Code or to comply with Section 409A of the Code, as applicable, and the provisions of this Award Agreement will be interpreted, operated, and administered in a manner consistent with these intentions. Anything to the contrary in the Plan or this Award Agreement requiring the consent of the Participant notwithstanding, the Company reserves the right, to the extent the Company deems necessary or advisable in its sole discretion, to unilaterally amend or modify the Plan and/or this Award Agreement to ensure that the Performance Units qualify for exemption from or comply with Section 409A of the Code; provided, however, that the Company makes no representations that the Performance Units will be exempt from or comply with Section 409A of the Code, and makes no undertaking to preclude Section 409A of the Code from applying to the Performance Units, and the Company will have no liability to the Participant or any other party if a payment under this Award Agreement that is intended to be exempt from, or compliant with, Section 409A of the Code is not so exempt or compliant or for any action taken by the Committee with respect thereto. Notwithstanding anything to the contrary in the Plan, this Award Agreement or the Grant Notice, to the extent that the Participant is a "specified employee" (within the meaning of the Company's established methodology for determining "specified employees" for purposes of Section 409A of the Code), payment or distribution of any amounts with respect to the Performance Units that are subject to Section 409A of the Code will be made as soon as practicable following the first business day of the seventh month following the Participant's "separation from service" (within the meaning of Section 409A of the Code) from the Company and its Affiliates, or, if earlier, the date of the Participant's death.

SECTION 25. **Waiver**. The Participant acknowledges that a waiver by the Company of breach of any provision of the Award Agreement shall not operate or be considered as a waiver of any other provision of the Award Agreement, or of any subsequent breach by the Participant or any other participant.

SECTION 26. **Insider Trading Restrictions/Market Abuse Laws**. The Participant acknowledges that the Participant may be subject to insider trading restrictions and/or market abuse laws based on the exchange on which the Shares are listed and in applicable jurisdictions, including the United States, the Participant's country and the designated broker's country, that may affect his or her ability to accept, acquire, sell or otherwise dispose of Shares, rights to Shares (*e.g.*, Performance Units) or rights linked to the value of Shares under the Plan during such times as the Participant is considered to have "inside information" regarding the Company (as defined by the laws in applicable jurisdictions). Local insider trading laws and regulations may prohibit the cancellation or amendment of orders the Participant placed before the Participant possessed inside information. Furthermore, the Participant could be prohibited from (i) disclosing the inside information to any third party, which may include fellow employees and (ii) "tipping" third parties or causing them otherwise to buy or sell securities. Any restrictions under these laws or regulations are separate from and in addition to any restrictions that may be imposed under any applicable Company insider trading policy. The Participant acknowledges that it is his or her responsibility to comply with any applicable restrictions, and the Participant should consult his or her personal advisor on this matter.

SECTION 27. **Foreign Asset/Account, Exchange Control and Tax Reporting**. The Participant acknowledges that the Participant may be subject to foreign asset/account, exchange control and/or tax reporting requirements as a result of the acquisition, holding and/or transfer of Shares or cash (including dividends and the proceeds arising from the sale of Shares) derived from his or her participation in the Plan in, to and/or from a brokerage/bank account or legal entity located outside the Participant's country. The applicable laws of the Participant's country may require that the Participant report such accounts, assets, the balances therein, the value thereof and/or the transactions related thereto to the applicable authorities in such country. The Participant acknowledges that he or she is responsible for ensuring compliance with any applicable foreign asset/account, exchange control and tax reporting requirements and should consult his or her personal legal advisor on this matter.

SECTION 28. **Entire Agreement**. This Award Agreement (including any addenda), the Grant Notice and the Plan contain the entire agreement and understanding of the parties hereto with respect to the subject matter contained herein and supersede all prior communications, representations and negotiations in respect thereto.

ADDENDUM
ADDITIONAL TERMS AND CONDITIONS APPLICABLE TO
AWARD AGREEMENT (PERF UNIT-010)

TERMS AND CONDITIONS

This Addendum, which is part of the Award Agreement, includes additional terms and conditions that govern the Award and that will apply to the Participant if he or she resides in one of the countries listed below. Capitalized terms that are not defined in this Addendum shall have the meanings used or defined in the Award Agreement or the Plan.

NOTIFICATIONS

This Addendum also includes information regarding securities, exchange control and certain other issues of which the Participant should be aware with respect to his or her participation in the Plan. The information is based on the securities, exchange control and other laws in effect in the countries set forth below as of August 2019. Such laws are often complex and change frequently. As a result, the Participant should not rely solely on this Addendum for information relating to the consequences of participating in the Plan because such information may be outdated when the Participant's Performance Units vest and/or the Participant sells any Shares acquired on a settlement date.

In addition, the information set forth in this Addendum is general in nature and may not apply to the Participant's particular situation. As a result, the Company is not in a position to assure the Participant of any particular result. The Participant therefore should seek appropriate professional advice as to the application of relevant laws in the Participant's country to the Participant's particular situation.

Finally, if the Participant is a citizen or resident of a country other than the one in which he or she currently is working, or transfers to a different country after the Grant Date, the information set forth in this Addendum may not apply to the Participant.

ALL COUNTRIES OUTSIDE THE U.S.

Data Privacy Consent. Notice. The purpose of this Notice is to inform the Participant about how the Company processes the Participant's Personal Data in connection with the Plan and the Award Agreement. The Company is the controller of the Participant's Personal Data.

(a) Data Processing and Legal Basis. The Company collects, uses and otherwise processes Personal Data about the Participant for the Company's legitimate business interests for the purposes of allocating Shares and implementing, administering and managing the Plan and/or for the purposes of performing a contract between the Company and the Participant. The Personal Data processed by the Company may include, without limitation, the Participant's name, home address and telephone number, email address, date of birth, social insurance number, passport number or other identification number (e.g., resident registration number), salary, nationality, job title, any shares of stock or directorships held in the Company or its Affiliates, details of all Awards or any other entitlement to shares of stock or equivalent benefits awarded, canceled, exercised, vested, unvested or outstanding in the Participant's favor of implementing, administering and managing the Plan.

*(b) Stock Plan Administration Service Providers. The Company may transfer the Participant's Personal Data, or parts thereof, to (i) E*Trade Financial (and its affiliated companies), an independent service provider based in the United States which assists the Company with the implementation, administration and management of the Plan and (ii) My Equity Comp (and its affiliated companies), an independent service provider based in the United States which assists the Company with the preparation of tax forms and tax returns. In the future, the Company may select different service providers and share the Participant's Personal Data with such different service providers that serves the Company in a similar manner. The Company's service providers will open an account for the Participant to receive and trade Shares acquired under the Plan and that the Participant will be asked to agree on separate terms and data*

processing practices with the service provider, which is a condition of the Participant's ability to participate in the Plan. In addition to the foregoing service providers, the Company may transfer portions of the Participant's Personal Data related to the Participant's stock holdings to competent public authorities in connection with statutory audit reports and/or where required by law.

*(c) International Data Transfers. The Company and, as of the date hereof, any third parties assisting in the implementation, administration and management of the Plan, such as E*Trade Financial, are based in the United States. If the Participant is located outside the United States, the Participant's country may have enacted data privacy laws that are different from the laws of the United States. Where it is necessary to transfer the Participant's Personal Data to a different country to where the Participant is based, the Company has implemented appropriate safeguards to protect the Participant's Personal Data, including the execution of data transfer agreements with the recipient of the information. For further information, or a copy of, the adequate safeguards adopted by the Company, the Participant should contact the Participant's local human resources representative. The Company shall process any request in line with applicable law and the Company policy and procedures.*

(d) Data Retention. The Company will process the Participant's Personal Data only as long as is necessary to implement, administer and manage the Participant's participation in the Plan, or to comply with legal or regulatory obligations, including under tax and securities laws. In the latter case, the Participant understands and acknowledges that the Company's legal basis for the processing of the Participant's Personal Data would be compliance with the relevant laws or regulations. When the Company no longer needs the Participant's Personal Data for any of the above purposes, the Participant understands the Company will remove it from its systems.

(e) Data Subject Rights. The Data subject rights regarding the processing of personal data vary depending on the applicable law and that, depending on where the Participant is based and subject to the conditions set out in the applicable law, the Participant may have, without limitation, the rights to (i) inquire whether and what kind of Personal Data the Company holds about the Participant and how it is processed, and to access or request copies of such Personal Data, (ii) request the correction or supplementation of Personal Data about the Participant that is inaccurate, incomplete or out- of-date in light of the purposes underlying the processing, (iii) obtain the erasure of Personal Data no longer necessary for the purposes underlying the processing, processed based on withdrawn consent, processed for legitimate interests that, in the context of the Participant's objection, do not prove to be compelling, or processed in non-compliance with applicable legal requirements, (iv) request the Company to restrict the processing of the Participant's Personal Data in certain situations where the Participant feels its processing is inappropriate, (v) object, in certain circumstances, to the processing of Personal Data for legitimate interests, and to (vi)request portability of the Participant's Personal Data that the Participant has actively or passively provided to the Company (which does not include data derived or inferred from the collected data), where the processing of such Personal Data is based on consent or the Participant's employment and is carried out by automated means. In case of concerns, the Participant may also have the right to lodge a complaint with the competent local data protection authority. Further, to receive clarification of, or to exercise any of, the Participant's rights the Participant should contact the Participant's local human resources representative.

Language. The Participant acknowledges that he or she is proficient in the English language, or has consulted with an advisor who is sufficiently proficient in English, so as to allow the Participant to understand the terms and conditions of this Award Agreement. If the Participant receives the Award Agreement or any other document related to the Plan translated into a language other than English and if the meaning of the translated version is different than the English version, the English version will control.

AUSTRALIA

TERMS AND CONDITIONS

Australian Offer Document. The Participant's right to participate in the Plan, vest in the Performance Units, and receive the Shares underlying the Performance Units granted under the Plan is subject to the terms and conditions stated in the

Plan, the Australian Offer Document, the Award Agreement and this Addendum, all of which are intended to comply with the provisions of the Australian Corporations Act 2001, ASIC Regulatory Guide 49 and ASIC Class Order CO 14/1000.

Performance Units Payable in Shares Only. Notwithstanding any discretion in the Plan, due to securities law considerations in Australia, the Performance Units will be settled in Shares only. The Performance Units do not provide any right for the Participant to receive a cash payment.

Tax Information. The Plan is a plan to which Subdivision 83A-C of the Income Tax Assessment Act 1997 (Cth) applies (subject to conditions in the Act).

NOTIFICATIONS

Exchange Control Notification. Exchange control reporting is required for cash transactions exceeding A$10,000 and international fund transfers. If there is an Australian bank assisting with the transaction, the Australian bank will file the report for the Participant. If there is no Australian bank involved in the transaction, the Participant must file the report.

BELGIUM

NOTIFICATIONS

Tax Reporting Notification. The Participant must report any taxable income attributable to the Performance Units on the Participant's annual tax return.

Foreign Asset/Account Reporting Notification. The Participant must report securities held (including Shares) or any bank or brokerage accounts opened and maintained outside Belgium on the Participant's annual tax return. In a separate report, the Participant is required to report to the National Bank of Belgium the details of such accounts opened and maintained outside Belgium. This report, as well as additional information on how to complete it, can be found on the website of the National Bank of Belgium, www.nbb.be, under the Kredietcentrales / Centrales des crédits caption.

Stock Exchange Tax. A stock exchange tax applies to transactions executed by a Belgian resident through a non-Belgian financial intermediary, such as a U.S. broker. The stock exchange tax will likely apply when Shares acquired upon vesting of the Performance Units are sold. The Participant should consult with his or her personal tax advisor for additional details on his or her obligations with respect to the stock exchange tax.

Brokerage Account Tax. A brokerage account tax applies to Belgian residents if the average annual value of securities (including Shares) held in a brokerage account exceeds certain thresholds. Belgian residents should consult with a personal tax or financial advisor for additional details on their obligations with respect to the brokerage account tax.

BRAZIL

TERMS AND CONDITIONS

Compliance with Law. By accepting the Award, the Participant agrees to comply with applicable Brazilian laws and pay any and all applicable taxes associated with the issuance of Shares upon vesting of the Performance Units, the subsequent sale of Shares issued in settlement of the Performance Units, and the receipt of any dividends.

Labor Law Acknowledgment. By accepting the Award, the Participant agrees that (i) he or she is making an investment decision, (ii) the Shares will be issued to the Participant only if the vesting conditions are met, and (iii) the value of the underlying Shares is not fixed and may increase or decrease in value over the vesting period without compensation to the Participant.

NOTIFICATIONS

Foreign Asset/Account Reporting Notification. If the Participant holds assets and rights outside Brazil with an aggregate value exceeding US$100,000, the Participant will be required to prepare and submit to the Central Bank of Brazil an annual declaration of such assets and rights, including: (i) bank deposits; (ii) loans; (iii) financing transactions; (iv) leases; (v) direct investments; (vi) portfolio investments, including Shares acquired under the Plan; (vii) financial derivatives investments; and (viii) other investments, including real estate and other assets. In addition, if the Participant holds such assets and rights outside Brazil with an aggregate value exceeding US$100,000,000, then quarterly reporting to the Central Bank of Brazil is required.

Please note that foreign individuals holding Brazilian visas are considered Brazilian residents for purposes of this reporting requirement and must declare at least the assets held abroad that were acquired subsequent to the date of admittance as a resident of Brazil. Individuals holding assets and rights outside Brazil valued at less than US$100,000 are not required to submit a declaration. Please note that the US$100,000 threshold may be changed annually.

Tax on Financial Transaction ("IOF"). Cross-border financial transactions relating to Performance Units may be subject to the IOF (tax on financial transactions). The Participant should consult with his or her personal tax advisor for additional details.

CANADA

TERMS AND CONDITIONS

Performance Units Payable in Shares Only. Notwithstanding any discretion in the Plan, due to securities law considerations in Canada, the Performance Units will be settled in Shares only. The Performance Units do not provide any right for the Participant to receive a cash payment.

Termination of Employment. The following provision replaces Section 8(l) of the Award Agreement:

Except as otherwise provided by the Committee or the Grant Notice, in the event of termination of the Participant's employment (regardless of the reason for such termination and whether or not later found invalid or in breach of employment laws in the jurisdiction where the Participant is employed or the terms of the Participant's employment agreement, if any), the Participant's right to vest in the Performance Units under the Plan, if any, will terminate effective as of the date that is the earlier of (i) the date on which the Participant's employment is terminated by the Company or the Employer, (ii) the date on which the Participant receives a notice of termination of employment from the Company or the Employer, or (iii) the date on which the Participant is no longer providing active services to the Company or Employer, regardless of any notice period or period of pay in lieu of such notice required under local law; the Committee shall have the exclusive discretion to determine when the Participant is no longer employed for purposes of the Performance Units (including whether the Participant may still be considered to be providing services while on a leave of absence).

The following terms and conditions apply if the Participant is in Quebec:

Authorization to Release and Transfer Necessary Personal Information. The following provision supplements the "Data Privacy Consent" provision set forth above in this Addendum:

The Participant hereby authorizes the Company and the Company's representatives to discuss with and obtain all relevant information from all personnel, professional or not, involved in the administration and operation of the Plan. The Participant further authorizes the Company and/or any Affiliate to disclose and discuss the Plan with their advisors. The Participant further authorizes the Company and any Affiliate to record and keep such information in the Participant's employment file.

French Language Acknowledgment. The following provision supplements the "Language" provision set forth above in this Addendum:

The parties acknowledge that it is their express wish that this Award Agreement, as well as all documents, notices and legal proceedings entered into, given or instituted pursuant hereto or relating directly or directly hereto, be drawn up in English.

Les parties reconnaissent avoir exigé la rédaction en anglais de cette convention, ainsi que de tous documents, avis et procédures judiciaires, exécutés, donnés ou intentés en vertu de, ou liés directement ou indirectement à, la présente convention.

NOTIFICATIONS

Securities Law Notification. The Participant will not be permitted to sell or otherwise dispose of the Shares acquired under the Plan within Canada. The Participant will be permitted to sell or dispose of any Shares only if such sale or disposal takes place outside Canada through the facilities of the stock exchange on which the Shares are traded.

Foreign Asset/Account Reporting Notification. If the total cost of the Participant's foreign property (including cash held outside Canada and Performance Units and Shares acquired under the Plan) exceeds C$100,000 at any time during the year, the Participant must report all of his or her foreign property on Form T1135 (Foreign Income Verification Statement). Thus, unvested Performance Units must be reported (generally at a nil cost) if the C$100,000 cost threshold is exceeded by other foreign property the Participant holds. When Shares are acquired, their cost generally is the adjusted cost base ("ACB") of the Shares. The ACB typically equals the fair market value of the Shares at the time of acquisition, but if the Participant owns other Shares, the ACB may have to be averaged with the ACB of the other Shares. The Participant should consult with his or her personal tax advisor to ensure compliance with any reporting requirements.

CHILE

NOTIFICATIONS

Securities Law Notification. This grant of Performance Units constitutes a private offering of securities in Chile effective as of the Grant Date. This offer of Performance Units is made subject to general ruling n° 336 of the Chilean Commission for the Financial Market ("CMF"). The offer refers to securities not registered at the securities registry or at the foreign securities registry of the CMF, and, therefore, such securities are not subject to oversight of the CMF. Given that the Performance Units are not registered in Chile, the Company is not required to provide public information about the Performance Units or the Shares in Chile. Unless the Performance Units and/or the Shares are registered with the CMF, a public offering of such securities cannot be made in Chile.

Esta Oferta de Performance Units constituye una oferta privada de valores en Chile y se inicia en la Fecha de la Oferta. Esta oferta de Performance Units se acoge a las disposiciones de la Norma de Carácter General N° 336 ("NCG 336") de la Comisión para el Mercado Financiero de Chile ("CMF"). Esta oferta versa sobre valores no inscritos en el Registro de Valores o en el Registro de Valores Extranjeros que lleva la CMF, por lo que tales valores no están sujetos a la fiscalización de ésta. Por tratarse de valores no inscritos en Chile no existe la obligación por parte de la Compañía de entregar en Chile información pública respecto de los mismos. Estos valores no podrán ser objeto de oferta pública en Chile mientras no sean inscritos en el Registro de Valores correspondiente.

Exchange Control Notification. The Participant is not required to repatriate funds obtained from the sale of Shares or the receipt of any dividends. However, if the Participant decides to repatriate such funds, the Participant must do so through the Formal Exchange Market ("*Mercado Cambiario Formal*") if the amount of the funds exceeds US$10,000. In such case, the Participant must report the payment to a commercial bank or registered foreign exchange office receiving the funds.

If the Participant's aggregate investments held outside Chile meets or exceeds US$5,000,000 (including the investments made under the Plan), the Participant must report the investments annually to the Central Bank ("*Banco Central de Chile*"), no later than 60 calendar days following the closing of the month of December. Annex 3.1 of Chapter XII of the Foreign Exchange Regulations must be used to file this report.

Please note that exchange control regulations in Chile are subject to change. The Participant should consult with his or her personal legal advisor regarding any exchange control obligations that the Participant may have prior to the vesting of the Performance Units.

Annual Tax Reporting Obligation. The Chilean Internal Revenue Service ("CIRS") requires Chilean residents to report the details of their foreign investments on an annual basis. Foreign investments include Shares acquired under the Plan. Further, if the Participant wishes to receive a credit against his or her Chilean income taxes for any taxes paid abroad, the Participant must also report the payment of taxes abroad to the CIRS. These reports must be submitted electronically through the CIRS website at www.sii.cl. in accordance with applicable deadlines. In addition, Shares acquired upon settlement of the Performance Units must be registered with the CIRS's Foreign Investment Registry. The Participant should consult with his or her personal legal and tax advisors to ensure compliance with applicable requirements.

FRANCE

TERMS AND CONDITIONS

Performance Units Not Tax-Qualified. The Participant understands that the Performance Units are not intended to be French tax-qualified pursuant to Section L. 225-197 1 to L. 225-197 6 of the French Commercial Code, as amended.

Language Consent. By accepting the Performance Units, the Participant confirms having read and understood the Plan and the Award Agreement, including all terms and conditions included therein, which were provided in the English language. The Participant accepts the terms of those documents accordingly.

En acceptant ces <<Performance Units>>, le Participant confirme avoir lu et compris le Plan et le convention, incluant tous leurs termes et conditions, qui ont été transmis en langue anglaise. Le Participant accepte les dispositions de ces documents en connaissance de cause.

NOTIFICATIONS

Foreign Asset/Account Reporting Notification. If the Participant holds securities (e.g., Shares) or maintains a foreign bank account, this must be reported to the French tax authorities when filing his or her annual tax return, whether such accounts are open, current or closed. Failure to comply could trigger significant penalties. The Participant should consult with his or her personal tax advisor to ensure compliance with applicable reporting obligations.

GERMANY

NOTIFICATIONS

Exchange Control Notification. Cross-border payments in connection with the sale of securities or any dividends received in relation to Shares in excess of €12,500 must be reported monthly to the German Federal Bank. The Participant is responsible for satisfying the reporting obligation and must file the report electronically by the fifth day of the month following the month in which the payment is made. A copy of the form can be accessed via the German Federal Bank's website at www.bundesbank.de and is available in both German and English. No report is required for payments less than €12,500.

Foreign Asset/Account Reporting Notification. In the unlikely event that the Participant holds Shares exceeding 1% of the Company's total shares of common stock, the Participant must notify his or her local tax office of the acquisition of Shares if the acquisition costs for all Shares held by the Participant exceeds €150,000 or if the Participant holds 10% or more in the Company's total shares of common stock.

HONDURAS

There are no country-specific provisions.

INDIA

NOTIFICATIONS

Exchange Control Notification. The Participant understands that the Performance Units are subject to compliance with the exchange control requirements of the Reserve Bank of India. The Participant understands that he or she must repatriate and convert the proceeds into local currency from the sale of Shares acquired under the Plan within ninety (90) days of receipt and any proceeds from dividends paid on Shares held within one-hundred eighty (180) days of receipt, or within other such period of time as may be required under applicable regulations. The Participant will receive a foreign inward remittance certificate ("FIRC") from the bank where the Participant deposits the foreign currency. The Participant should maintain the FIRC as evidence of the repatriation of funds in the event the Reserve Bank of India or the Employer requests proof of repatriation. The Participant should consult with his or her personal legal advisor to ensure compliance with the applicable requirements.

Foreign Asset/Account Reporting Notification. The Participant is required to declare any foreign bank accounts and foreign financial assets (including Shares held outside India) in the Participant's annual tax return. It is the Participant's responsibility to comply with this reporting obligation and the Participant should consult with his or her personal tax advisor in this regard.

INDONESIA

TERMS AND CONDITIONS

Language Consent and Notification. By accepting the Award, the Participant (i) confirms having read and understood the documents relating to this grant (*i.e.*, the Plan and the Award Agreement) which were provided in the English language, (ii) accepts the terms of those documents accordingly, and (iii) agrees not to challenge the validity of this document based on Law No. 24 of 2009 on National Flag, Language, Coat of Arms and National Anthem or the implementing Presidential Regulation (when issued).

Persetujuan dan Pemberitahuan Bahasa. Dengan menerima Penghargaan, Peserta (i) mengkonfirmasi bahwa dirinya telah membaca dan mengerti dokumen-dokumen yang terkait dengan pemberian ini (yaitu, Program dan Perjanjian Penghargaan) yang disediakan dalam Bahasa Inggris, (ii) menerima syarat-syarat dari dokumen-dokumen tersebut, dan (iii) setuju untuk tidak mengajukan keberatan atas keberlakuan dokumen ini berdasarkan Undang-Undang No. 24 Tahun 2009 tentang Bendera, Bahasa, dan Lambang Negara, Serta Lagu Kebangsaan atau Peraturan Presiden pelaksananya (ketika diterbitkan).

NOTIFICATIONS

Exchange Control Notification. Indonesian residents are obligated to provide Bank Indonesia with information on foreign exchange activities via a monthly report. Repatriation of proceeds from the sale of Shares or dividends back to Indonesia will trigger the reporting requirement. The report should be submitted online through Bank Indonesia's website no later than the 15th day of the month following the month in which the activity occurred.

In addition, if proceeds from the sale of Shares or dividends are repatriated to Indonesia, the Indonesian bank handling the transaction is responsible for submitting a report to Bank Indonesia. The Participant should be prepared to provide information, data and/or supporting documents upon request from the bank for purposes of preparing the report.

JAPAN

NOTIFICATIONS

Foreign Asset/Account Reporting Notification. The Participant is required to report details of any assets held outside Japan as of December 31, including Shares, to the extent such assets have a total net fair market value exceeding ¥50,000,000. Such report will be due from the Participant by March 15 each year. The Participant is responsible for complying with this reporting obligation and should confer with his or her personal tax advisor as to whether the Participant will be required to report the details of Performance Units or Shares he or she holds.

JORDAN

There are no country-specific provisions.

MALAYSIA

TERMS AND CONDITIONS

Data Privacy. The following provision replaces the "Data Privacy" provision set forth above in this Addendum:

The Participant hereby explicitly, voluntarily and unambiguously consents to the collection, use and transfer, in electronic or other form, of his or her personal data as described in the Award Agreement and any other Plan participation materials by and among, as applicable, the Company, the Employer and any other Affiliate or any third parties authorized by same in assisting in the implementation, administration and management of the Participant's participation in the Plan. ***The Participant may have previously provided the Company and the Employer with, and the Company and the Employer may hold, certain personal information about the Participant, including, but not limited to, his or her name, home address, email address, and telephone number, date of birth, social insurance number, passport or other identification number, salary, nationality, job title, any shares of stock or directorships held in the Company, the fact and conditions of the Participant's participation in the Plan, details of all Performance Units or any other entitlement to shares of stock awarded, cancelled, exercised, vested, unvested or outstanding in the Participant's favor ("Data"), for the exclusive purpose of implementing, administering and managing the Plan.***	***Peserta dengan ini secara jelas, secara sukarela dan tanpa sebarang keraguan mengizinkan pengumpulan, penggunaan dan pemindahan, dalam bentuk elektronik atau lain-lain, data peribadinya seperti yang dinyatakan dalam Perjanjian ini dan apa-apa bahan penyertaan Pelan oleh dan di antara, sebagaimana yang berkenaan, Syarikat, Penerima Perkhidmatan dan mana-mana Syarikat Induk atau Anak Syarikat lain atau mana-mana pihak ketiga yang diberi kuasa oleh yang sama untuk membantu dalam pelaksanaan, pentadbiran dan pengurusan penyertaan Pesertadalam Pelan tersebut.*** ***Sebelum ini, Pesertamungkin telah membekalkan Syarikat dan Penerima Perkhidmatan dengan, dan Syarikat dan Majikan mungkin memegang, maklumat peribadi tertentu tentang Peserta, termasuk, tetapi tidak terhad kepada, namanya , alamat rumah dan nombor telefon, alamat emel, tarikh lahir, insurans sosia, nombor pasport atau pengenalan lain, gaji, kewarganegaraan, jawatan, apa-apa syer dalam saham atau jawatan pengarah yang dipegang dalam Syarikat, fakta dan syarat-syarat penyertaan Peserta dalam Pelan, butir-butir semua opsyenatau apa-apa hak lain untuk syer dalam saham yang dianugerahkan, dibatalkan, dilaksanakan, terletak hak, tidak diletak hak ataupun bagi faedah Peserta ("Data"), untuk tujuan yang eksklusif bagi melaksanakan, mentadbir dan menguruskan Pelan tersebut.***

*The Participant also authorizes any transfer of Data, as may be required, to such stock plan service provider as may be selected by the Company from time to time, which is assisting the Company with the implementation, administration and management of the Plan and/or with whom any Shares acquired upon vesting of the Performance Units are deposited. The Participant acknowledges that these recipients may be located in the Participant's country or elsewhere, and that the recipient's country (***e.g.,** *the United States) may have different data privacy laws and protections to the Participant's country, which may not give the same level of protection to Data. The Participant understands that he or she may request a list with the names and addresses of any potential recipients of Data by contacting his or her local human resources representative. The Participant authorizes the Company, the stock plan service provider and any other possible recipients which may assist the Company (presently or in the future) with implementing, administering and managing the Participant's participation in the Plan to receive, possess, use, retain and transfer Data, in electronic or other form, for the sole purpose of implementing, administering and managing the Participant's participation in the Plan. The Participant understands that Data will be held only as long as is necessary to implement, administer and manage his or her participation in the Plan. The Participant understands that he or she may, at any time, view Data, request additional information about the storage and processing of Data, require any necessary amendments to Data or refuse or withdraw the consents herein, in any case, without cost, by contacting in writing his or her local human resources representative, whose contact details are:* *No 8, Jalan Hi-Tech 3/3* *Zon Indusrtri Fasa 3, Kulim Hi Tech Park* *09000, Kulim, Kedah Darul Aman Malaysia* *Further, the Participant understands that he or she is providing the consents herein on a purely voluntary basis. If the Participant does not consent, or if the Participant later seeks to revoke the consent, his or her status and career with the Company and the Employer will not be adversely affected; the only adverse consequence of refusing or withdrawing the consent is that the Company would not be able to grant future Performance Units or other equity awards to the Participant or administer or maintain such awards. Therefore, the Participant understands that refusing or withdrawing his or her consent may affect his or her ability to participate in the Plan. For more information on the consequences of the refusal to consent or withdrawal of consent, the Participant understands that he or she may contact his or her local human resources representative.*	*Peserta juga memberi kuasa untuk membuat apa-apa pemindahan Data, sebagaimana yang diperlukan, kepada pembekal perkhidmatan pelan saham sebagaimana yang dipilih oleh Syarikatdari semasa ke semasa, yang membantu Syarikat dalam pelaksanaan, pentadbiran dan pengurusan Pelandan/atau dengan sesiapa yang mendepositkan Saham yang diperolehi melalui pelaksanaan Opsyen ini. Peserta mengakui bahawa penerima-penerima ini mungkin berada di negara Peserta atau di tempat lain, dan bahawa negara penerima (contohnya, Amerika Syarikat) mungkin mempunyai undang-undang privasi data dan perlindungan yang berbeza daripada negaraPeserta, yang mungkin tidak boleh memberi tahap perlindungan yang sama kepada Data. Peserta faham bahawa dia boleh meminta senarai nama dan alamat mana-mana penerima Data dengan menghubungi wakil sumber manusia tempatannya. Peserta memberi kuasa kepada Syarikat, pembekal perkhidmatan pelan saham dan mana-mana penerima lain yang mungkin membantu Syarikat (masa sekarang atau pada masa depan) untuk melaksanakan, mentadbir dan menguruskan penyertaan Peserta dalam Pelan untuk menerima, memiliki, menggunakan, mengekalkan dan memindahkan Data, dalam bentuk elektronik atau lain-lain, semata-mata dengan tujuan untuk melaksanakan, mentadbir dan menguruskan penyertaan Peserta dalam Pelan tersebut. Peserta faham bahawa Data akan dipegang hanya untuk tempoh yang diperlukan untuk melaksanakan, mentadbir dan menguruskan penyertaannya dalam Pelan tersebut. Peserta faham bahawa dia boleh, pada bila-bila masa, melihat data, meminta maklumat tambahan mengenai penyimpanan dan pemprosesan Data, meminta bahawa pindaan-pindaan dilaksanakan ke atas Data atau menolak atau menarik balik persetujuan dalam ini, dalam mana-mana kes, tanpa kos, dengan menghubungi secara bertulis wakil sumber manusia di lokasi masing-masing, di mana butir-butir hubungannya adalah:* *No 8, Jalan Hi-Tech 3/3* *Zon Indusrtri Fasa 3, Kulim Hi Tech Park* *09000, Kulim, Kedah Darul Aman Malaysia* *Selanjutnya, Peserta memahami bahawa dia memberikan persetujuan di sini secara sukarela. Jika Peserta tidak bersetuju, atau jika Peserta kemudian membatalkan persetujuannya , status sebagai Pemberi Perkhidmatan dan kerjayanya dengan Penerima Perkhidmatan tidak akan terjejas; satunya akibat buruk jika dia tidak bersetuju atau menarik balik persetujuannya adalah bahawa Syarikat tidak akan dapat memberikan opsyen pada masa depan atau anugerah ekuiti lain kepada Peserta atau mentadbir atau mengekalkan anugerah tersebut. Oleh itu, Peserta faham bahawa keengganan atau penarikan balik persetujuannya boleh menjejaskan keupayaannya untuk mengambil bahagian dalam Pelan tersebut. Untuk maklumat lanjut mengenai akibat keengganannya untuk memberikan keizinan atau penarikan balik keizinan,Peserta fahami bahawa dia boleh menghubungi wakil sumber manusia tempatannya*

NOTIFICATIONS

Director Notification Obligation. If the Participant is a director of an Affiliate, the Participant is subject to certain notification requirements under the Malaysian Companies Act, 2016. Among these requirements is an obligation on the Participant's part to notify the Malaysian Affiliate in writing when the Participant acquires an interest (*e.g.*, Performance Units or Shares) in the Company or any related companies. In addition, the Participant must notify the Malaysian Affiliate when the Participant sells Shares (including Shares acquired under the Plan) or the shares of any related company. These notifications must be made within 14 days of acquiring or disposing of any interest in the Company or any related company.

MEXICO

TERMS AND CONDITIONS

Labor Law Acknowledgment. By accepting the Award, the Participant acknowledges that he or she understands and agrees that: (a) the Performance Units are not related to the salary and other contractual benefits provided to the Participant by the Employer; and (b) any modification of the Plan or its termination shall not constitute a change or impairment of the terms and conditions of the Participant's employment.

Policy Statement. The invitation the Company is making under the Plan is unilateral and discretionary and, therefore, the Company reserves the absolute right to amend it and discontinue it at any time without any liability to the Participant.

The Company, with registered offices at 350 West Washington Street, Suite 600, Tempe, Arizona 85281, United States of America is solely responsible for the administration of the Plan and participation in the Plan or the acquisition of Shares does not, in any way, establish an employment relationship between the Participant and the Company since the Participant is participating in the Plan on a wholly commercial basis and the sole employer is a Mexican legal entity that employs the Participant and to which he/she is subordinated, nor does it establish any rights between the Participant and the Employer.

Plan Document Acknowledgment. By accepting the Award, the Participant acknowledges that he or she has received a copy of the Plan, has reviewed the Plan and the Award Agreement in their entirety and fully understands and accepts all provisions of the Plan and the Award Agreement.

The Participant further acknowledges that having read and specifically and expressly approved the terms and conditions in the Section 8 of the Award Agreement, in which the following is clearly described and established: (a) participation in the Plan does not constitute an acquired right; (b) the Plan and participation in the Plan is offered by the Company on a wholly discretionary basis; (c) participation in the Plan is voluntary; and (d) the Company and its Affiliates are not responsible for any decrease in the value of the Shares underlying the Performance Units.

Finally, the Participant does not reserve any action or right to bring any claim against the Company for any compensation or damages as a result of participation in the Plan and the Participant therefore grants a full and broad release to the Employer and the Company (including its Affiliates) with respect to any claim that may arise under the Plan.

Spanish Translation

Reconocimiento de la Ley Laboral. Al aceptar el Otorgamiento, el Beneficiario reconoce y acepta que: (a) las Unidades no se encuentran relacionadas con su salario ni con otras prestaciones contractuales concedidas por parte del Patrón; y (b) cualquier modificación del Plan o su terminación no constituye un cambio o impedimento de los términos y condiciones del empleo del Beneficiario.

Declaración de la Política. La invitación que hace la Compañía bajo el Plan es unilateral y discrecional, por lo que la Compañía se reserva el derecho absoluto de modificar e interrumpir el mismo en cualquier tiempo, sin ninguna responsabilidad para el Beneficiario.

La Compañía, con oficinas ubicadas en 350 West Washington Street, Suite 600, Tempe, Arizona 85281, United States of America, es la única responsable por la administración y la participación en el Plan, así como de la adquisición de acciones, por lo que de ninguna manera podrá establecerse una relación de trabajo entre el Beneficiario y la Compañía, ya que el Beneficiario participa únicamente en de forma comercial y que su único Patrón es una empresa legal Mexicana a quien se encuentra subordinado; la participación en el Plan tampoco genera ningún derecho entre el Beneficiario y el Patrón.

Reconocimiento del Plan de Documentos. Al aceptar el Otorgamiento, el Beneficiario reconoce que ha recibido una copia del Plan, que lo ha revisado junto con el Convenio, y que ha entendido y aceptado completamente las disposiciones contenidas en el Plan y en el Convenio.

Adicionalmente, al firmar el presente documento, el Beneficiario reconoce que ha leído y aprobado de manera expresa y específica los términos y condiciones contenidos en el apartado 8 del Convenio, el cual claramente establece y describe: (a) que la participación en el Plan no constituye un derecho adquirido; (b) que el Plan y la participación en el mismo es ofrecido por la Compañía en forma totalmente discrecional; (c) que la participación en el Plan es voluntaria; y (d) que la Compañía, así como sus Afiliadas, no son responsables por cualquier detrimento en el valor de las acciones que integran las Unidades.

Finalmente, el Beneficiario acepta no reservarse ninguna acción o derecho para interponer una demanda en contra de la Compañía por compensación, daño o perjuicio alguno como resultado de su participación en el Plan y en consecuencia, otorga al Patrón el más amplio y completo finiquito que en derecho proceda, así como a la Compañía y sus Afiliadas, respecto a cualquier demanda que pudiera originarse derivada del Plan.

NETHERLANDS

TERMS AND CONDITIONS

Labor Law Acknowledgment. By accepting the Performance Unit, the Participant acknowledges that: (i) the Performance Unit is intended as an incentive to remain employed with the Employer and is not intended as remuneration for labor performed; and (ii) the Performance Unit is not intended to replace any pension rights or compensation.

PHILIPPINES

NOTIFICATIONS

Securities Law Information. This offering is subject to exemption from the requirements of securities registration with the Philippines Securities and Exchange Commission, under Section 10.1 (k) of the Philippine Securities Regulation Code. Section 10.1(k) of the Philippine Securities Regulation Code provides as follows:

"Section 10.1 Exempt Transactions – The requirement of registration under Subsection 8.1 shall not apply to the sale of any security in any of the following section;

[. . .]

"(k) The sale of securities by an issuer to fewer than twenty (20) persons in the Philippines during any twelve-month period."

THE SECURITIES BEING OFFERED OR SOLD HAVE NOT BEEN REGISTERED WITH THE SECURITIES AND EXCHANGE COMMISSION UNDER THE SECURITIES REGULATION CODE. ANY FURTHER OFFER OR SALE THEREOF IS SUBJECT TO REGISTRATION REQUIREMENTS UNDER THE CODE UNLESS SUCH OFFER OR SALE QUALIFIES AS AN EXEMPT TRANSACTION.

The Participant acknowledges he or she is permitted to dispose or sell Shares acquired under the Plan provided the offer and resale of the Shares takes place outside the Philippines through the facilities of a stock exchange on which the Shares are listed. The Shares are currently listed on the NASDAQ Global Select Market in the United States of America.

SINGAPORE

NOTIFICATIONS

Securities Law Notification. The Performance Units are being granted to the Participant pursuant to the "Qualifying Person" exemption under section 273(1)(f) of the Singapore Securities and Futures Act (Chapter 289, 2006 Ed.) ("SFA"). The Plan has not been lodged or registered as a prospectus with the Monetary Authority of Singapore. The Participant should note that such Performance Unit grant is subject to section 257 of the SFA and the Participant will not be able to make any subsequent sale in Singapore, or any offer of such subsequent sale of the Shares underlying the Award, unless such sale or offer in Singapore is made (i) more than six months from the Grant Date, (ii) pursuant to the exemptions under Part XIII Division (1) Subdivision (4) (other than section 280) of the SFA, or (iii) pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA. The Shares are currently traded on the NASDAQ Global Select Market, which is located outside Singapore, and Shares acquired under the Plan may be sold through this exchange.

Chief Executive Officer/Director Notification Requirement. If the Participant is a Chief Executive Officer ("CEO") director, associate director or shadow director of a Singaporean Affiliate, the Participant is subject to certain notification requirements under the Singapore Companies Act. Among these requirements is an obligation to notify the Singapore Affiliate in writing of an interest (*e.g.*, unvested Performance Units, Shares, etc.) in the Company or any Affiliate within two (2) business days of (i) its acquisition or disposal, (ii) any change in previously disclosed interest (*e.g.*, when Shares acquired at vesting are sold), or (iii) becoming the CEO or a director, associate director or shadow director.

THAILAND

NOTIFICATIONS

Exchange Control Notification. Thai resident Participants realizing US$50,000 or more in a single transaction from the sale of Shares issued to the Participant following the vesting and settlement of the Performance Units must repatriate the proceeds to Thailand and then convert such proceeds to Thai Baht or deposit the proceeds into a foreign currency account opened with any commercial bank in Thailand within 360 days of repatriation. If the amount of the Participant's proceeds is US$50,000 or more, the Participant must provide details of the transaction (*i.e.*, identification information and purpose of the transaction) to the receiving bank. If the Participant fails to comply with these obligations, the Participant may be subject to penalties assessed by the Bank of Thailand. The Participant should consult his or her personal advisor before taking action with respect to the remittance of proceeds from the sale of Shares into Thailand. The Participant is responsible for ensuring compliance with all exchange control laws in Thailand.

TURKEY

NOTIFICATIONS

Securities Law Notification. Under Turkish law, the Participant is not permitted to sell any Shares acquired under the Plan in Turkey. The Shares are currently traded on the NASDAQ Global Select Market, which is located outside Turkey, under the ticker symbol "FSLR" and the Shares may be sold through this exchange.

Exchange Control Notification. Turkish residents are permitted to purchase and sell securities or derivatives traded on exchanges abroad only through a financial intermediary licensed in Turkey. Therefore, the Participant may be required to appoint a Turkish broker to assist the Participant with the sale of the Shares acquired under the Plan. The Participant should consult his or her personal legal advisor before selling any Shares acquired under the Plan to confirm the applicability of this requirement to the Participant.

UNITED ARAB EMIRATES ("UAE")

NOTIFICATIONS

Securities Law Notification. The Performance Units are available only for select employees of the Company and its Affiliates and is in the nature of providing employee incentives in the UAE. This Award Agreement, the Addendum, the Plan and other incidental communication materials are intended for distribution only to eligible employees for the purposes of an employee compensation or reward scheme, and must not be delivered to, or relied on, by any other person.

The Dubai Creative Clusters Authority, Emirates Securities and Commodities Authority and/or the Central Bank of the United Arab Emirates have no responsibility for reviewing or verifying any documents in connection with the Performance Units or this Award Agreement. Further, neither the Ministry of Economy nor the Dubai Department of Economic Development have approved this Award Agreement nor taken steps to verify the information set out in it, and have no responsibility for it.

The securities to which this Award Agreement relates may be illiquid and/or subject to restrictions on their resale. Individuals should conduct their own due diligence on the securities.

Residents of the UAE who do not understand or have questions regarding this Award Agreement, the Addendum or the Plan should consult an authorized financial adviser.

EXHIBIT 10.47

Form Cash-007

CASH INCENTIVE Award Agreement under the First Solar, Inc. 2015 Omnibus Incentive Compensation Plan, between First Solar, Inc. (the "Company"), a Delaware corporation, and the individual (the "Participant") set forth on the Grant Notice which incorporates this Form Cash-007 by reference.

This Cash Incentive Award Agreement including any addendum hereto and the Grant Notice (collectively, this "Award Agreement") set forth the terms and conditions of this Cash Incentive Award (this "Award") that is being granted to the Participant set forth on the Grant Notice on the date set forth in the Grant Notice (such date, the "Grant Date"), under the terms of the First Solar, Inc. 2015 Omnibus Incentive Compensation Plan (the "Plan") for the amount set forth in the Grant Notice. The Award is subject to the all terms and conditions of this Award Agreement and the Plan, including without limitation, THE DISPUTE RESOLUTION PROVISIONS SET FORTH IN SECTION 12 OF THIS CASH INCENTIVE AWARD AGREEMENT.

* * *

SECTION 1. **The Plan**. This Award is made pursuant to the Plan, all the terms of which are hereby incorporated in this Award Agreement. In the event of any conflict between the terms of the Plan, on the one hand, and the terms of this Award Agreement, on the other hand, the terms of the Plan shall govern.

SECTION 2. **Definitions**. The following terms are defined in this Award Agreement, and shall when capitalized have the meaning ascribed to them in this Award Agreement in the locations set forth below.

Defined Term	Cross-Ref.	Defined Term	Cross-Ref.
"Addendum"	Section 16	"Employer"	Section 3(b)
"Affiliate"	Section 3(a)	"Grant Date"	Paragraph 2
"Award"	Paragraph 2	"Participant"	Paragraph 1
"Award Agreement"	Paragraph 2	"Plan"	Paragraph 2
"Business Day"	Section 13	"Tax-Related Items"	Section 6
"Company"	Paragraph 1	"Vesting Date"	Section 3(a)

Capitalized terms that are not defined in this Award Agreement shall have the meanings used or defined in the Plan.

SECTION 3. **Vesting and Payment**.

(a) Vesting. Except as otherwise determined by the Committee in its sole discretion, the Participant shall vest in accordance with the vesting date(s) set forth in the Grant Notice (each a "Vesting Date"); provided that the Participant is actively employed by the Company or an Affiliate on the relevant Vesting Date. For purposes of this Agreement, an "Affiliate" of the Company is an individual or entity that directly, or indirectly through one or more intermediaries, controls, or is controlled by, or is under common control with, the Company.

(b) Payment. The portion of the Award that vests on the relevant Vesting Date will be paid to the Participant in cash, less Tax-Related Items, as defined in Section 6, as soon as administratively practicable following the applicable

Vesting Date, and in no event later than March 15th of the calendar year following the calendar year in which the Vesting Date occurs. No interest will be paid on the Award and the amounts will not be adjusted for inflation. The Award is denominated in U.S. dollars, but the Company shall pay, or shall cause Participant's employer (the "Employer") to pay, all amounts distributable under the Award in local currency through local payroll. Any amount that may become payable hereunder will be converted from U.S. dollars into local currency on the applicable Vesting Date at the exchange rate reported on the applicable Vesting Date in the Wall Street Journal (or such other reliable source as may be selected from time to time by the Company in its discretion).

SECTION 4. **Forfeiture**. Unless the Committee determines otherwise, if the Participant's rights with respect to the Award pursuant to this Award Agreement do not vest prior to the date on which the Participant's employment or service relationship with the Company and/or its Affiliates terminates for any reason, the Participant's rights with respect to such Award shall immediately terminate, and the Participant will not be entitled to receive any payments with respect thereto (as further described in Section 7(i) below).

SECTION 5. **Non-Transferability**. Unless otherwise provided by the Committee in its discretion, the Award may not be sold, assigned, alienated, transferred, pledged, attached or otherwise encumbered. Any purported sale, assignment, alienation, transfer, pledge, attachment or other encumbrance of an Award in violation of the provisions of this Section 5 shall be void.

SECTION 6. **Responsibility for Taxes**.

(a) Regardless of any action the Company or the Employer, takes with respect to any or all federal, state or local income tax, social security contributions, payroll tax, payment on account or other tax-related items related to the Participant's participation in the Plan that are legally applicable to the Participant ("Tax-Related Items"), the Participant acknowledges that the ultimate liability for all Tax-Related Items is and remains the Participant's responsibility and that such liability may exceed the amount actually withheld by the Company or the Employer. The Participant further acknowledges that the Company and/or the Employer (1) make no representations or undertakings regarding the treatment of any Tax-Related Items in connection with any aspect of the Award, including, without limitation, the grant, vesting or payment of the Award; and (2) do not commit to and are under no obligation to structure the terms of the Award to reduce or eliminate the Participant's liability for Tax-Related Items or achieve any particular tax result. Further, if the Participant becomes subject to tax and/or social security contributions in more than one jurisdiction, the Participant acknowledges that the Company and/or the Employer (or former employer, as applicable) may be required to withhold or account for Tax-Related Items in more than one jurisdiction.

(b) Prior to any relevant taxable, tax and/or social security contribution withholding event, the Participant shall pay or make adequate arrangements satisfactory to the Company and/or the Employer to satisfy all Tax-Related Items. In this regard, the Participant authorizes the Company and/or the Employer, at their discretion, to satisfy any applicable withholding obligations with regard to all Tax-Related Items by withholding from the amount of the cash payment made pursuant to the Award, the Participant's wages or other compensation payable to Participant by the Company and/or the Employer.

SECTION 7. **Nature of Award**. As a condition to receipt of this Award, the Participant acknowledges, understands and agrees that:

(a) the Plan is established voluntarily by the Company, is discretionary in nature and may be modified, amended, suspended or terminated by the Company at any time, unless otherwise provided in the Plan and this Award Agreement;

(b) this Award is exceptional, voluntary and occasional and does not create any contractual or other right to receive future awards of cash, or benefits in lieu of cash awards, even if cash awards have been granted repeatedly in the past;

(c) all decisions with respect to future cash awards, if any, will be at the sole discretion of the Company;

(d) the Participant's participation in the Plan shall not create a right to further employment with the Employer and shall not interfere with the ability of the Employer to terminate the Participant's employment relationship at any time;

(e) the Participant's participation in the Plan is voluntary;

(f) the Award is not intended to replace any pension rights or compensation;

(g) this Award and the Participant's participation in the Plan will not be interpreted to form or amend an employment or service agreement or relationship with the Company or any Affiliate;

(h) no claim or entitlement to compensation or damages shall arise from forfeiture of the Award resulting from termination of the Participant's employment or other service relationship by the Company or the Employer (for any reason whatsoever, whether or not later found to be invalid or in breach of employment laws in the jurisdiction where Participant is employed or the terms of Participant's employment agreement, if any);

(i) except as otherwise provided by the Committee or the Grant Notice, in the event of termination of the Participant's employment or service relationship, the Participant's right to vest in the Award under the Plan, if any, will terminate effective as of the date the Participant is no longer actively providing services to the Company, the Employer or any Affiliate of the Company (regardless of the reason for such termination and whether or not later found to be invalid or in breach of employment laws in the jurisdiction where the Participant is employed or the terms of the Participant's employment agreement, if any), and unless otherwise expressly provided in this Award Agreement or determined by the Company, the Participant's right to vest in the Award under the Plan, if any, will terminate as of such date and will not be extended by any notice period (*e.g.*, the Participant's period of service would not include any contractual notice period or any period of "garden leave" or similar period mandated under employment laws in the jurisdiction where the Participant is employed or the terms of the Participant's employment agreement, if any); the Committee shall have the exclusive discretion to determine when the Participant is no longer actively providing services for purposes of the Award (including whether the Participant may still be considered to be providing services while on a leave of absence);

(j) unless otherwise agreed with the Company, the Award is not granted as consideration for, or in connection with, the service Participant may provide as a director of an Affiliate;

(k) the Award and the benefits under the Plan, if any, will not automatically transfer to a successor company in the case of a Change of Control or a merger, takeover, or transfer of liability of the Employer; and

(l) neither the Company nor the Employer or any Affiliate shall be liable for any foreign exchange rate fluctuation between the Participant's local currency and the United States Dollar that may affect the value of the Award or of any amounts due to the Participant.

SECTION 8. **No Advice Regarding Grant**. Nothing in this Award Agreement should be viewed as the provision by the Company of any tax, legal, or financial advice, nor is the Company making any recommendations regarding the Participant's participation in the Plan. The Participant understands and agrees that the Participant should consult with the Participant's own personal tax, legal and financial advisors regarding the Participant's participation in the Plan before taking any action in relation thereto.

SECTION 9. **Electronic Delivery**. The Company may, in its sole discretion, decide to deliver any documents related to current or future participation in the Plan by electronic means. Receipt of this Award is conditioned upon the Participant's consent to such electronic delivery and the Participant's agreement to participate in the Plan

through an online or electronic system established and maintained by the Company or a third party designated by the Company.

SECTION 10. **Successors and Assigns of the Company**. The terms and conditions of this Award Agreement shall be binding upon and shall inure to the benefit of the Company and its successors and assigns.

SECTION 11. **Committee Discretion**. The Committee shall have full and plenary discretion with respect to any actions to be taken or determinations to be made in connection with this Award Agreement, and its determinations shall be final, binding and conclusive.

SECTION 12. **Dispute Resolution**.

(a) Jurisdiction and Venue. Notwithstanding any provision in any employment agreement between the Participant and the Company or any Affiliate, the Participant and the Company hereby irrevocably submit to the exclusive jurisdiction of (i) the United States District Court for the District of Delaware and (ii) the courts of the State of Delaware for the purposes of any action, suit or other proceeding arising out of this Award Agreement or the Plan. The Participant and the Company agree to commence any such action, suit or proceeding either in the United States District Court for the District of Delaware or, if such action, suit or other proceeding may not be brought in such court for jurisdictional reasons, in the courts of the State of Delaware. The Participant and the Company further agree that service of any process, summons, notice or document by U.S. registered mail (or its equivalent in the Participant's country of residence) to the applicable address set forth in Section 13 below shall be effective service of process for any action, suit or proceeding in Delaware with respect to any matters to which the Participant has submitted to jurisdiction in this Section 12(a). The Participant and the Company irrevocably and unconditionally waive any objection to the laying of venue of any action, suit or proceeding arising out of this Award Agreement or the Plan in (A) the United States District Court for the District of Delaware, or (B) the courts of the State of Delaware, and hereby and thereby further irrevocably and unconditionally waive and agree not to plead or claim in any such court that any such action, suit or proceeding brought in any such court has been brought in an inconvenient forum.

(b) Waiver of Jury Trial. Notwithstanding any provision in the Participant's employment agreement, if any, between the Participant and the Company, the Participant and the Company hereby waive, to the fullest extent permitted by applicable law, any right either may have to a trial by jury in respect to any litigation directly or indirectly arising out of, under or in connection with this Award Agreement or the Plan.

(c) Confidentiality. The Participant hereby agrees to keep confidential the existence of, and any information concerning, a dispute described in this Section 12, except that the Participant may disclose information concerning such dispute to the court that is considering such dispute or to the Participant's legal counsel (provided that such counsel agrees not to disclose any such information other than as necessary to the prosecution or defense of the dispute).

SECTION 13. **Notice**. All notices, requests, demands and other communications required or permitted to be given under the terms of this Award Agreement shall be in writing and shall be deemed to have been duly given when delivered by hand or overnight courier or three Business Days after they have been mailed by U.S. registered mail (or its equivalent in the Participant's country of residence), return receipt requested, postage prepaid, addressed to the other party as set forth below:

If to the Company:	First Solar, Inc. 350 W Washington Street, Suite 600 Tempe, AZ 85281 Attention: Stock Plan Administrator
If to the Participant:	To the address most recently supplied to the Company and set forth in the Company's records

The parties may change the address to which notices under this Award Agreement shall be sent by providing written notice to the other in the manner specified above. For this purpose, "Business Day" means a day that is not a Saturday, a Sunday or a day on which banking institutions are legally permitted to be closed in Phoenix, Arizona, U.S.

SECTION 14. **Governing Law**. This Award Agreement shall be deemed to be made in the State of Delaware, and the validity, construction and effect of this Award Agreement in all respects shall be determined in accordance with the laws of the State of Delaware, without giving effect to the conflict of law principles thereof.

SECTION 15. **Headings**. Headings are given to the Sections and subsections of this Award Agreement solely as a convenience to facilitate reference. Such headings shall not be deemed in any way material or relevant to the construction or interpretation of this Award Agreement or any provision thereof.

SECTION 16. **Country-Specific or Other Addenda**.

(a) Notwithstanding any provisions in this Award Agreement or the Plan, this Award shall be subject to such special terms and conditions set forth in any Addendum attached hereto ("Addendum") or as may later become applicable, as described herein.

(b) If the Participant becomes subject to the laws of a jurisdiction to which an Addendum applies, the special terms and conditions for such jurisdiction will apply to this Award to the extent the Committee determines that the application of such terms and conditions is necessary or advisable to comply with local laws or to facilitate the administration of the Plan; and provided the imposition of the term or condition will not result in any adverse accounting expense with respect to the Award.

(c) Any Addenda attached hereto shall be considered a part of this Award Agreement.

SECTION 17. **Severability**. The provisions of this Award Agreement are severable, and, if any one or more provisions are determined to be illegal or otherwise unenforceable, in whole or in part, the remaining provisions nevertheless shall be binding and enforceable.

SECTION 18. **Amendment of this Award Agreement**. The Committee may waive any conditions or rights under, amend any terms of, or alter, suspend, discontinue, cancel or terminate this Award Agreement prospectively or retroactively; provided, however, that any such waiver, amendment, alteration, suspension, discontinuance, cancellation or termination that would materially and adversely impair the Participant's rights under this Award Agreement shall not to that extent be effective without the Participant's consent (it being understood, notwithstanding the foregoing proviso, that this Award Agreement and the Award shall be subject to the provisions of Section 7(c) of the Plan).

SECTION 19. **Imposition of Other Requirements**. The Company reserves the right to impose other requirements on the Participant's participation in the Plan and on the Award, to the extent that the Company determines it is necessary or advisable to comply with local law or facilitate the administration of the Plan, and to require the Participant to sign any additional agreements or undertakings that may be necessary to accomplish the foregoing.

SECTION 20. **Acceptance of Terms and Conditions**. As a condition to receipt of this Award, the Participant confirms that he/she has read and understood the documents relating to this Award (i.e., the Plan, this Award Agreement, including any Addendum) and accepts the terms of those documents accordingly.

SECTION 21. **Counterparts**. Where signature of this Award Agreement is contemplated in the Grant Notice or any Addendum, this Award Agreement may be signed in counterparts, with the same effect as if the signatures thereto and hereto were upon the same instrument.

SECTION 22. **Code Section 409A**. This Award is intended to be exempt from the application of Section 409A of the Code, and any ambiguities herein will be interpreted to so comply. Anything to the contrary in the Plan or this Award Agreement requiring the consent of the Participant notwithstanding, the Company reserves the right, to the extent the Company deems necessary or advisable in its sole discretion, to unilaterally amend or modify the Plan and/or this Award Agreement to ensure that the Award qualifies for exemption from or comply with Section 409A of the Code; provided, however, that the Company makes no representations that the Award will be exempt from or comply with Section 409A of the Code, and makes no undertaking to preclude Section 409A of the Code from applying to the Award, and the Company will have no liability to the Participant or any other party if a payment under this Award Agreement that is intended to be exempt from, or compliant with, Section 409A of the Code is not so exempt or compliant or for any action taken by the Committee with respect thereto.

SECTION 23. **Waiver**. The Participant acknowledges that a waiver by the Company of breach of any provision of the Award Agreement shall not operate or be considered as a waiver of any other provision of the Award Agreement, or of any subsequent breach by the Participant or any other participant.

SECTION 24. **Foreign Asset/Account, Exchange Control and Tax Reporting**. The Participant acknowledges that, depending on his or her country, the Participant may be subject to foreign asset/account, exchange control and/or tax reporting requirements as a result of the acquisition, holding and/or transfer of cash derived from his or her participation in the Plan in, to and/or from a brokerage/bank account or legal entity located outside the Participant's country. The applicable laws of the Participant's country may require that the Participant report such accounts, assets, the balances therein, the value thereof and/or the transactions related thereto to the applicable authorities in such country. The Participant acknowledges that he or she is responsible for ensuring compliance with any applicable foreign asset/account, exchange control and tax reporting requirements and should consult his or her personal legal advisor on this matter.

SECTION 25. **Entire Agreement**. This Award Agreement (including any addenda), the Grant Notice and the Plan contain the entire agreement and understanding of the parties hereto with respect to the subject matter contained herein and supersede all prior communications, representations and negotiations in respect thereto.

ADDENDUM
ADDITIONAL TERMS AND CONDITIONS APPLICABLE TO
AWARD AGREEMENT (CASH-007)

TERMS AND CONDITIONS

This Addendum, which is part of the Award Agreement, includes additional terms and conditions that govern the Award and that will apply to the Participant if he or she is a citizen of or resides in one of the countries listed below. Capitalized terms that are not defined in this Addendum shall have the meanings used or defined in the Award Agreement or the Plan.

NOTIFICATIONS

This Addendum also includes information regarding securities, exchange control and certain other issues of which the Participant should be aware with respect to his or her participation in the Plan. The information is based on the securities, exchange control and other laws in effect in the countries set forth below as of August 2019. Such laws are often complex and change frequently. As a result, the Participant should not rely solely on this Addendum for information relating to the consequences of participating in the Plan because such information may be outdated when the Participant's Award vests.

In addition, the information set forth in this Addendum is general in nature and may not apply to the Participant's particular situation. As a result, the Company is not in a position to assure the Participant of any particular result. The Participant therefore should seek appropriate professional advice as to the application of relevant laws in the Participant's country to the Participant's particular situation.

Finally, if the Participant is a citizen or resident of a country other than the one in which he or she currently is working, or transfers to a different country after the Grant Date, the information set forth in this Addendum may not apply to the Participant.

ALL COUNTRIES OUTSIDE THE U.S.

Data Privacy Consent. Notice. The purpose of this Notice is to inform the Participant about how the Company processes the Participant's Personal Data in connection with the Plan and the Award Agreement. The Company is the controller of the Participant's Personal Data.

(a) Data Processing and Legal Basis. The Company collects, uses and otherwise processes Personal Data about the Participant for the Company's legitimate business interests for the purposes of allocating Shares and implementing, administering and managing the Plan and/or for the purposes of performing a contract between the Company and the Participant. The Personal Data processed by the Company may include, without limitation, the Participant's name, home address and telephone number, email address, date of birth, social insurance number, passport number or other identification number (e.g., resident registration number), salary, nationality, job title, any shares of stock or directorships held in the Company or its Affiliates, details of all Awards or any other entitlement to shares of stock or equivalent benefits awarded, canceled, exercised, vested, unvested or outstanding in the Participant's favor of implementing, administering and managing the Plan.

*(b) Stock Plan Administration Service Providers. The Company may transfer the Participant's Personal Data, or parts thereof, to (i) E*Trade Financial (and its affiliated companies), an independent service provider based in the United States which assists the Company with the implementation, administration and management of the Plan and (ii) My Equity Comp (and its affiliated companies), an independent service provider based in the United States which assists the Company with the preparation of tax forms and tax returns. In the future, the Company may select different service providers and share the Participant's Personal Data with such different service providers that serves the Company in a similar manner. The Company's service providers will open an account for the Participant to receive*

and trade Shares acquired under the Plan and that the Participant will be asked to agree on separate terms and data processing practices with the service provider, which is a condition of the Participant's ability to participate in the Plan. In addition to the foregoing service providers, the Company may transfer portions of the Participant's Personal Data related to the Participant's stock holdings to competent public authorities in connection with statutory audit reports and/or where required by law.

*(c) International Data Transfers. The Company and, as of the date hereof, any third parties assisting in the implementation, administration and management of the Plan, such as E*Trade Financial, are based in the United States. If the Participant is located outside the United States, the Participant's country may have enacted data privacy laws that are different from the laws of the United States. Where it is necessary to transfer the Participant's Personal Data to a different country to where the Participant is based, the Company has implemented appropriate safeguards to protect the Participant's Personal Data, including the execution of data transfer agreements with the recipient of the information. For further information, or a copy of, the adequate safeguards adopted by the Company, the Participant should contact the Participant's local human resources representative. The Company shall process any request in line with applicable law and the Company policy and procedures.*

(d) Data Retention. The Company will process the Participant's Personal Data only as long as is necessary to implement, administer and manage the Participant's participation in the Plan, or to comply with legal or regulatory obligations, including under tax and securities laws. In the latter case, the Participant understands and acknowledges that the Company's legal basis for the processing of the Participant's Personal Data would be compliance with the relevant laws or regulations. When the Company no longer needs the Participant's Personal Data for any of the above purposes, the Participant understands the Company will remove it from its systems.

*(e) Data Subject Rights**.** The Data subject rights regarding the processing of personal data vary depending on the applicable law and that, depending on where the Participant is based and subject to the conditions set out in the applicable law, the Participant may have, without limitation, the rights to (i) inquire whether and what kind of Personal Data the Company holds about the Participant and how it is processed, and to access or request copies of such Personal Data, (ii) request the correction or supplementation of Personal Data about the Participant that is inaccurate, incomplete or out- of-date in light of the purposes underlying the processing, (iii) obtain the erasure of Personal Data no longer necessary for the purposes underlying the processing, processed based on withdrawn consent, processed for legitimate interests that, in the context of the Participant's objection, do not prove to be compelling, or processed in non-compliance with applicable legal requirements, (iv) request the Company to restrict the processing of the Participant's Personal Data in certain situations where the Participant feels its processing is inappropriate, (v) object, in certain circumstances, to the processing of Personal Data for legitimate interests, and to (vi)request portability of the Participant's Personal Data that the Participant has actively or passively provided to the Company (which does not include data derived or inferred from the collected data), where the processing of such Personal Data is based on consent or the Participant's employment and is carried out by automated means. In case of concerns, the Participant may also have the right to lodge a complaint with the competent local data protection authority. Further, to receive clarification of, or to exercise any of, the Participant's rights the Participant should contact the Participant's local human resources representative.*

Language. The Participant acknowledges that he or she is proficient in the English language, or has consulted with an advisor who is sufficiently proficient in English, so as to allow the Participant to understand the terms and conditions of this Award Agreement. If the Participant receives the Award Agreement or any other document related to the Plan translated into a language other than English and if the meaning of the translated version is different than the English version, the English version will control.

AUSTRALIA

There are no country-specific provisions.

BELGIUM

NOTIFICATIONS

Tax Reporting Notification. The Participant must report any taxable income attributable to the Award on the Participant's annual tax return.

Foreign Asset/Account Reporting Notification. The Participant must report any bank accounts opened and maintained outside Belgium on the Participant's annual tax return. In a separate report, the Participant is required to report to the National Bank of Belgium any bank accounts opened and maintained outside Belgium. This report, as well as additional information on how to complete it, can be found on the website of the National Bank of Belgium, www.nbb.be, under the Kredietcentrales / Centrales des crédits caption.

BRAZIL

TERMS AND CONDITIONS

Compliance with Law. By accepting the Award, the Participant agrees to comply with applicable Brazilian laws and pay any and all applicable taxes associated with the cash payment upon vesting of the Award.

Not a Form of Remuneration. By accepting the Award, the Participant agrees, for all legal purposes, that (i) the benefits provided under the Award are the result of commercial transactions unrelated to the Participant's employment, (ii) the Award is not part of the terms and conditions of the Participant's employment, and (iii) the income from the Award, if any, is not part of the Participant's remuneration from employment.

Labor Law Acknowledgement. By accepting the Award, the Participant agrees that cash will be issued to the Participant only if the vesting conditions are met.

NOTIFICATIONS

Foreign Asset/Account Reporting Notification. If the Participant holds assets and rights outside Brazil with an aggregate value exceeding US$100,000, the Participant will be required to prepare and submit to the Central Bank of Brazil an annual declaration of such assets and rights, including: (i) bank deposits; (ii) loans; (iii) financing transactions; (iv) leases; (v) direct investments; (vi) portfolio investments; (vii) financial derivatives investments; and (viii) other investments, including real estate and other assets. In addition, if the Participant holds such assets and rights outside Brazil with an aggregate value exceeding US$100,000,000, then quarterly reporting to the Central Bank of Brazil is required.

Please note that foreign individuals holding Brazilian visas are considered Brazilian residents for purposes of this reporting requirement and must declare at least the assets held abroad that were acquired subsequent to the date of admittance as a resident of Brazil. Individuals holding assets and rights outside Brazil valued at less than US$100,000 are not required to submit a declaration. Please note that the US$100,000 threshold may be changed annually.

Tax on Financial Transaction ("IOF"). Cross-border financial transactions relating to Award may be subject to the IOF (tax on financial transactions). The Participant should consult with his or her personal tax advisor for additional details.

CANADA

TERMS AND CONDITIONS

Termination of Employment. The following provision replaces Section 7(i) of the Award Agreement:

Except as otherwise provided by the Committee or the Grant Notice, in the event of termination of the Participant's employment (regardless of the reason for such termination and whether or not later found invalid or in breach of employment laws in the jurisdiction where the Participant is employed or the terms of the Participant's employment agreement, if any), the Participant's right to vest in the Award under the Plan, if any, will terminate effective as of the date that is the earlier of (i) the date on which the Participant's employment is terminated by the Company or the Employer, (ii) the date on which the Participant receives a notice of termination of employment from the Company or the Employer, or (iii) the date on which the Participant is no longer providing active services to the Company or Employer, regardless of any notice period or period of pay in lieu of such notice required under local law; the Committee shall have the exclusive discretion to determine when the Participant is no longer employed for purposes of the Award (including whether the Participant may still be considered to be providing services while on a leave of absence).

The following terms and conditions apply if the Participant is in Quebec:

Authorization to Release and Transfer Necessary Personal Information. The following provision supplements the "Data Privacy Consent" provision set forth above in this Addendum:

The Participant hereby authorizes the Company and the Company's representatives to discuss with and obtain all relevant information from all personnel, professional or not, involved in the administration and operation of the Plan. The Participant further authorizes the Company and/or any Affiliate to disclose and discuss the Plan with their advisors. The Participant further authorizes the Company and any Affiliate to record and keep such information in the Participant's employment file.

French Language Acknowledgment. The following provision supplements the "Language" provision set forth above in this Addendum:

The parties acknowledge that it is their express wish that this Award Agreement, as well as all documents, notices and legal proceedings entered into, given or instituted pursuant hereto or relating directly or directly hereto, be drawn up in English.

Les parties reconnaissent avoir exigé la rédaction en anglais de cette convention, ainsi que de tous documents, avis et procédures judiciaires, exécutés, donnés ou intentés en vertu de, ou liés directement ou indirectement à, la présente convention.

NOTIFICATIONS

Foreign Asset/Account Reporting Notification. If the total cost of the Participant's foreign specified property (including cash held outside Canada) exceeds C$100,000 at any time during the year, the Participant must report all of his or her foreign specified property on Form T1135 (Foreign Income Verification Statement). The Participant should consult with his or her personal tax advisor to ensure compliance with any reporting requirements.

CHILE

There are no country-specific provisions.

CHINA

There are no country-specific provisions.

FRANCE

TERMS AND CONDITIONS

Language Consent. By accepting the Award, the Participant confirms having read and understood the Plan and the Award Agreement, including all terms and conditions included therein, which were provided in the English language. Participant accepts the terms of those documents accordingly.

En acceptant ces <<Award>>, le Participant confirme avoir lu et compris le Plan et le convention, incluant tous leurs termes et conditions, qui ont été transmis en langue anglaise. Le Participant accepte les dispositions de ces documents en connaissance de cause.

NOTIFICATIONS

Foreign Asset/Account Reporting Notification. If the Participant holds securities or maintains a foreign bank account, this must be reported to the French tax authorities when filing his or her annual tax return, whether such accounts are open, current or closed. Failure to comply could trigger significant penalties. The Participant should consult with his or her personal tax advisor to ensure compliance with applicable reporting obligations.

GERMANY

NOTIFICATIONS

Exchange Control Notification. Cross-border payments in excess of €12,500 must be reported monthly to the German Federal Bank. The Participant is responsible for satisfying the reporting obligation and must file the report electronically by the fifth day of the month following the month in which the payment is made. A copy of the form can be accessed via the German Federal Bank's website at www.bundesbank.de and is available in both German and English. No report is required for payments less than €12,500.

HONDURAS

There are no country-specific provisions.

INDIA

NOTIFICATIONS

Foreign Asset/Account Reporting Notification. The Participant is required to declare any foreign bank accounts and foreign financial assets in the Participant's annual tax return. It is the Participant's responsibility to comply with this reporting obligation and the Participant should consult with his or her personal tax advisor in this regard.

INDONESIA

TERMS AND CONDITIONS

Language Consent and Notification. By accepting the Award, the Participant (i) confirms having read and understood the documents relating to this grant (*i.e.*, the Plan and the Award Agreement) which were provided in the English language, (ii) accepts the terms of those documents accordingly, and (iii) agrees not to challenge the validity of this

document based on Law No. 24 of 2009 on National Flag, Language, Coat of Arms and National Anthem or the implementing Presidential Regulation (when issued).

Persetujuan dan Pemberitahuan Bahasa. Dengan menerima Penghargaan, Peserta (i) mengkonfirmasi bahwa dirinya telah membaca dan mengerti dokumen-dokumen yang terkait dengan pemberian ini (yaitu, Program dan Perjanjian Penghargaan) yang disediakan dalam Bahasa Inggris, (ii) menerima syarat-syarat dari dokumen-dokumen tersebut, dan (iii) setuju untuk tidak mengajukan keberatan atas keberlakuan dokumen ini berdasarkan Undang-Undang No. 24 Tahun 2009 tentang Bendera, Bahasa, dan Lambang Negara, Serta Lagu Kebangsaan atau Peraturan Presiden pelaksananya (ketika diterbitkan).

JAPAN

There are no country-specific provisions.

JORDAN

There are no country-specific provisions.

MALAYSIA

TERMS AND CONDITIONS

Data Privacy. The following provision replaces the "Data Privacy Consent" provision set forth above in this Addendum:

The Participant hereby explicitly, voluntarily and unambiguously consents to the collection, use and transfer, in electronic or other form, of his or her personal data as described in the Award Agreement and any other Plan participation materials by and among, as applicable, the Company, the Employer and any other Affiliate or any third parties authorized by same in assisting in the implementation, administration and management of the Participant's participation in the Plan. ***The Participant may have previously provided the Company and the Employer with, and the Company and the Employer may hold, certain personal information about the Participant, including, but not limited to, his or her name, home address, email address and telephone number, date of birth, social insurance number, passport or other identification number, salary, nationality, job title, any directorships held in the Company, details of all Awards or any other entitlement in the Participant's favor ("Data"), for the exclusive purpose of implementing, administering and managing the Plan.***	***Peserta dengan ini secara eksplicit, secara sukarela dan tanpa sebarang keraguan mengizinkan pengumpulan, penggunaan dan pemindahan, dalam bentuk elektronik atau lain-lain, data peribadinya seperti yang dinyatakan dalam Perjanjian Penganugerahan ini dan apa-apa bahan penyertaan Pelan oleh dan di antara, sebagaimana yang berkenaan, Syarikat, Penerima Perkhidmatan dan Syarikat Induk atau Anak Syarikat lain atau mana-mana pihak ketiga yang diberi kuasa oleh yang sama untuk membantu dalam pelaksanaan, pentadbiran dan pengurusan penyertaan Peserta dalam Pelan tersebut.*** ***Sebelum ini, Peserta mungkin telah membekalkan Syarikat dan Penerima Perkhidmatan dengan, dan Syarikat dan Penerima Perkhidmatan mungkin memegang, maklumat peribadi tertentu tentang Peserta, termasuk, tetapi tidak terhad kepada, namanya, alamat rumah dan nombor telefon, alamat emel, tarikh lahir, insurans sosia, nombor pasport atau pengenalan lain, gaji, kewarganegaraan, jawatan, apa-apa jawatan pengarah yang dipegang dalam Syarikat,butir-butir semua Anugerah atau apa-apa hak bagi faedah Peserta ("Data"), untuk tujuan yang eksklusif bagi melaksanakan, mentadbir dan menguruskan Pelan tersebut.***

The Participant also authorizes any transfer of Data, as may be required, to such service provider as may be selected by the Company from time to time, which is assisting the Company with the implementation, administration and management of the Plan. The Participant acknowledges that these recipients may be located in the Participant's country or elsewhere, and that the recipient's country (e.g., the United States) may have different data privacy laws and protections to the Participant's country, which may not give the same level of protection to Data. The Participant understands that he or she may request a list with the names and addresses of any potential recipients of Data by contacting his or her local human resources representative. The Participant authorizes the Company, the stock plan service provider and any other possible recipients which may assist the Company (presently or in the future) with implementing, administering and managing the Participant's participation in the Plan to receive, possess, use, retain and transfer Data, in electronic or other form, for the sole purpose of implementing, administering and managing the Participant's participation in the Plan. The Participant understands that Data will be held only as long as is necessary to implement, administer and manage his or her participation in the Plan. The Participant understands that he or she may, at any time, view Data, request additional information about the storage and processing of Data, require any necessary amendments to Data or refuse or withdraw the consents herein, in any case, without cost, by contacting in writing his or her local human resources representative, whose contact details are No 8, Jalan Hi-Tech 3/3 Zon Indusrtri Fasa 3, Kulim Hi Tech Park 09000, Kulim, Kedah Darul Aman Malaysia. Further, the Participant understands that he or she is providing the consents herein on a purely voluntary basis. If the Participant does not consent, or if the Participant later seeks to revoke the consent, his or her status and career with the Company and the Employer will not be adversely affected; the only adverse consequence of refusing or withdrawing the consent is that the Company would not be able to grant future Awards to the Participant or administer or maintain such Awards. Therefore, the Participant understands that refusing or withdrawing his or her consent may affect his or her ability to participate in the Plan. For more information on the consequences of the refusal to consent or withdrawal of consent, the Participant understands that he or she may contact his or her local human resources representative.	***Peserta juga memberi kuasa untuk membuat apa-apa pemindahan Data, sebagaimana yang diperlukan, kepada pembekal perkhidmatan sebagaimana yang dipilih oleh Syarikat dari semasa ke semasa, yang membantu Syarikat dalam pelaksanaan, pentadbiran dan pengurusan Pelan . Peserta mengakui bahawa penerima-penerima ini mungkin berada di negara Peserta atau di tempat lain, dan bahawa negara penerima (contohnya, Amerika Syarikat) mungkin mempunyai undang-undang privasi data dan perlindungan yang berbeza daripada negaraPeserta, yang mungkin tidak boleh memberi tahap perlindungan yang sama kepada Data. Peserta faham bahawa dia boleh meminta senarai nama dan alamat mana-mana penerima Data dengan menghubungi wakil sumber manusia tempatannya. Peserta memberi kuasa kepada Syarikat, pembekal perkhidmatan pelan saham dan mana-mana penerima lain yang mungkin membantu Syarikat (masa sekarang atau pada masa depan) untuk melaksanakan, mentadbir dan menguruskan penyertaan Peserta dalam Pelan tersebut untuk menerima, memiliki, menggunakan, mengekalkan dan memindahkan Data, dalam bentuk elektronik atau lain-lain, semata-mata dengan tujuan untuk melaksanakan, mentadbir dan menguruskan penyertaannya dalam Pelan tersebut. Peserta faham bahawa Data akan dipegang hanya untuk tempoh yang diperlukan untuk melaksanakan, mentadbir dan menguruskan penyertaannya dalam Pelan tersebut. Peserta faham bahawa dia boleh, pada bila-bila masa, melihat data, meminta maklumat tambahan mengenai penyimpanan dan pemprosesan Data, meminta bahawa pindaan-pindaan dilaksanakan ke atas Data atau menolak atau menarik balik persetujuan dalam ini, dalam mana-mana kes, tanpa kos, dengan menghubungi secara bertulis wakil sumber manusia tempatannya , di mana butir-butir hubungannya adalah No 8, Jalan Hi-Tech 3/3 Zon Indusrtri Fasa 3, Kulim Hi Tech Park 09000, Kulim, Kedah Darul Aman Malaysia. Selanjutnya, Pesertamemahami bahawa dia memberikan persetujuan di sini secara sukarela. Jika Peserta tidak bersetuju, atau jika Peserta kemudian membatalkan persetujuannya , statusnya sebagai Pemberi Perkhidmatan dan kerjayanya dengan Penerima Perkhidmatan tidak akan terjejas; satunya akibat buruk jika dia tidak bersetuju atau menarik balik persetujuannya adalah bahawa Syarikat tidak akan dapat memberikan Anugerah kepada Peserta atau mentadbir atau mengekalkan Anugerah tersebut. Oleh itu, Peserta faham bahawa keengganan atau penarikan balik persetujuannya boleh menjejaskan keupayaannya untuk mengambil bahagian dalam Pelan tersebut. Untuk maklumat lanjut mengenai akibat keengganannya untuk memberikan keizinan atau penarikan balik keizinan,Peserta fahami bahawa dia boleh menghubungi wakil sumber manusia tempatannya .***

MEXICO

TERMS AND CONDITIONS

Labor Law Acknowledgment. By accepting the Award, the Participant acknowledges that he or she understands and agrees that: (a) the Award is not related to the salary and other contractual benefits provided to the Participant by the Employer; and (b) any modification of the Plan or its termination shall not constitute a change or impairment of the terms and conditions of the Participant's employment.

Policy Statement. The invitation the Company is making under the Plan is unilateral and discretionary and, therefore, the Company reserves the absolute right to amend it and discontinue it at any time without any liability to the Participant.

The Company, with registered offices at 350 West Washington Street, Suite 600, Tempe, Arizona 85281, United States of America is solely responsible for the administration of the Plan and participation in the Plan does not, in any way, establish an employment relationship between the Participant and the Company since the Participant is participating in the Plan on a wholly commercial basis and the sole employer is a Mexican legal entity that employs the Participant and to which he/she is subordinated, nor does it establish any rights between the Participant and the Employer.

Plan Document Acknowledgment. By accepting the Award, the Participant acknowledges that he or she has received a copy of the Plan, has reviewed the Plan and the Award Agreement in their entirety and fully understands and accepts all provisions of the Plan and the Award Agreement.

The Participant further acknowledges that having read and specifically and expressly approved the terms and conditions in the Section 7 of the Award Agreement, in which the following is clearly described and established: (a) participation in the Plan does not constitute an acquired right; (b) the Plan and participation in the Plan is offered by the Company on a wholly discretionary basis; and (c) participation in the Plan is voluntary.

Finally, the Participant does not reserve any action or right to bring any claim against the Company for any compensation or damages as a result of participation in the Plan and the Participant therefore grants a full and broad release to the Employer and the Company (including its Affiliates) with respect to any claim that may arise under the Plan.

Spanish Translation

Reconocimiento de la Ley Laboral. Al aceptar el Beneficio, el Participante reconoce y acepta que: (a) el Beneficio no se encuentra relacionado con su salario ni con otras prestaciones contractuales concedidas por parte del Patrón; y (b) cualquier modificación del Plan o su terminación no constituye un cambio o impedimento de los términos y condiciones del empleo del Participante.

Declaración de la Política. La invitación que hace la Compañía bajo el Plan es unilateral y discrecional, por lo que la Compañía se reserva el derecho absoluto de modificar e interrumpir el mismo en cualquier tiempo, sin ninguna responsabilidad para el Participante.

La Compañía, con oficinas ubicadas en 350 West Washington Street, Suite 600. Tempe, Arizona 85281, Estados Unidos de America, es la única responsable por la administración y la participación en el Plan, así como de la adquisición de acciones, por lo que de ninguna manera podrá establecerse una relación de trabajo entre el Participante y la Compañía, ya que el Participante participa únicamente en de forma comercial y que su único patrón lo es Patrón es una empresa legal Mexicana a quien se encuentra subordinado; la participación en el Plan tampoco genera ningún derecho entre el Participante y el Patrón.

Reconocimiento del Plan de Documentos. Al aceptar el Beneficio, el Participante reconoce que ha recibido una copia del Plan, que lo ha revisado junto con el Convenio, y que ha entendido y aceptado completamente las disposiciones contenidas en el Plan y en el Convenio.

Adicionalmente, al firmar el presente documento, el Participante reconoce que ha leído y aprobado de manera expresa y específica los términos y condiciones contenidos en el apartado 7 del Convenio, el cual claramente establece y describe: (a) que la participación en el Plan no constituye un derecho adquirido; (b) que el Plan y la participación en el mismo es ofrecido por la Compañía en forma totalmente discrecional; (c) que la participación en el Plan es voluntaria; y (d) que la Compañía, así como sus afiliadas no son responsables por cualquier detrimento en el valor de las acciones que integran el Beneficio.

Finalmente, el Participante acepta no reservarse ninguna acción o derecho para interponer una demanda en contra de la Compañía por compensación, daño o perjuicio alguno como resultado de su participación en el Plan y en consecuencia, otorga al Patrón el más amplio y completo finiquito que en derecho proceda, así como a la Compañía y sus Afiliadas, respecto a cualquier demanda que pudiera originarse derivada del Plan.

MOROCCO

There are no country-specific provisions.

NETHERLANDS

TERMS AND CONDITIONS

Labor Law Acknowledgment. By accepting the Award, the Participant acknowledges that: (i) the Award is intended as an incentive to remain employed with the Employer and is not intended as remuneration for labor performed; and (ii) the Award is not intended to replace any pension rights or compensation.

PHILIPPINES

There are no country-specific provisions.

SAUDI ARABIA

There are no country-specific provisions.

SINGAPORE

There are no country-specific provisions.

THAILAND

There are no country-specific provisions.

TURKEY

There are no country-specific provisions.

UNITED ARAB EMIRATES

There are no country-specific provisions.

VIETNAM

There are no country-specific provisions.

EXHIBIT 21.1

SUBSIDIARIES OF FIRST SOLAR, INC.

Name	Jurisdiction
First Solar Electric, LLC	United States
First Solar Electric (California), Inc.	United States
First Solar Development, LLC	United States
First Solar Asset Management, LLC	United States
First Solar FE Holdings Pte Ltd	Singapore
First Solar Malaysia Sdn Bhd	Malaysia
First Solar Holdings GmbH	Germany
First Solar Manufacturing GmbH	Germany
First Solar GmbH	Germany
First Solar Vietnam Holdings Pte Ltd	Vietnam
First Solar Vietnam Manufacturing Co Ltd	Vietnam
First Solar Power India Pvt Ltd	India
First Solar Energía Limitada	Chile
Parque Solar Fotovoltaico Luz del Norte SpA	Chile
First Solar Development (Canada), Inc.	Canada
First Solar Japan GK	Japan
First Solar (Australia) Pty Ltd	Australia

EXHIBIT 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-8 (No. 333-204461) and Form S-3 (No. 333-189236) of First Solar, Inc. of our report dated February 20, 2020 relating to the financial statements and the effectiveness of internal control over financial reporting, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP

Phoenix, Arizona
February 20, 2020

EXHIBIT 31.01

CERTIFICATION OF CHIEF EXECUTIVE OFFICER
PURSUANT TO 15 U.S.C. SECTION 7241, AS
ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Mark R. Widmar, certify that:

(1) I have reviewed the Annual Report on Form 10-K of First Solar, Inc., a Delaware corporation, for the period ended December 31, 2019, as filed with the Securities and Exchange Commission;

(2) Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

(3) Based on my knowledge, the financial statements and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of and for, the periods presented in this report;

(4) The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

(b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, 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;

(c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

(d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an Annual Report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

(5) The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

February 20, 2020	By:	/s/ MARK R. WIDMAR
	Name:	Mark R. Widmar
	Title:	Chief Executive Officer

EXHIBIT 31.02

CERTIFICATION OF CHIEF FINANCIAL OFFICER
PURSUANT TO 15 U.S.C. SECTION 7241, AS
ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Alexander R. Bradley, certify that:

(1) I have reviewed the Annual Report on Form 10-K of First Solar, Inc., a Delaware corporation, for the period ended December 31, 2019, as filed with the Securities and Exchange Commission;

(2) Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

(3) Based on my knowledge, the financial statements and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of and for, the periods presented in this report;

(4) The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

(b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, 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;

(c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

(d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an Annual Report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

(5) The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

February 20, 2020	By:	/s/ ALEXANDER R. BRADLEY
	Name:	Alexander R. Bradley
	Title:	Chief Financial Officer

EXHIBIT 32.01

CERTIFICATION OF
CHIEF EXECUTIVE OFFICER AND CHIEF FINANCIAL OFFICER
PURSUANT TO 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report on Form 10-K of First Solar, Inc., a Delaware corporation, for the period ended December 31, 2019, as filed with the Securities and Exchange Commission, each of the undersigned officers of First Solar, Inc. certifies pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to his respective knowledge:

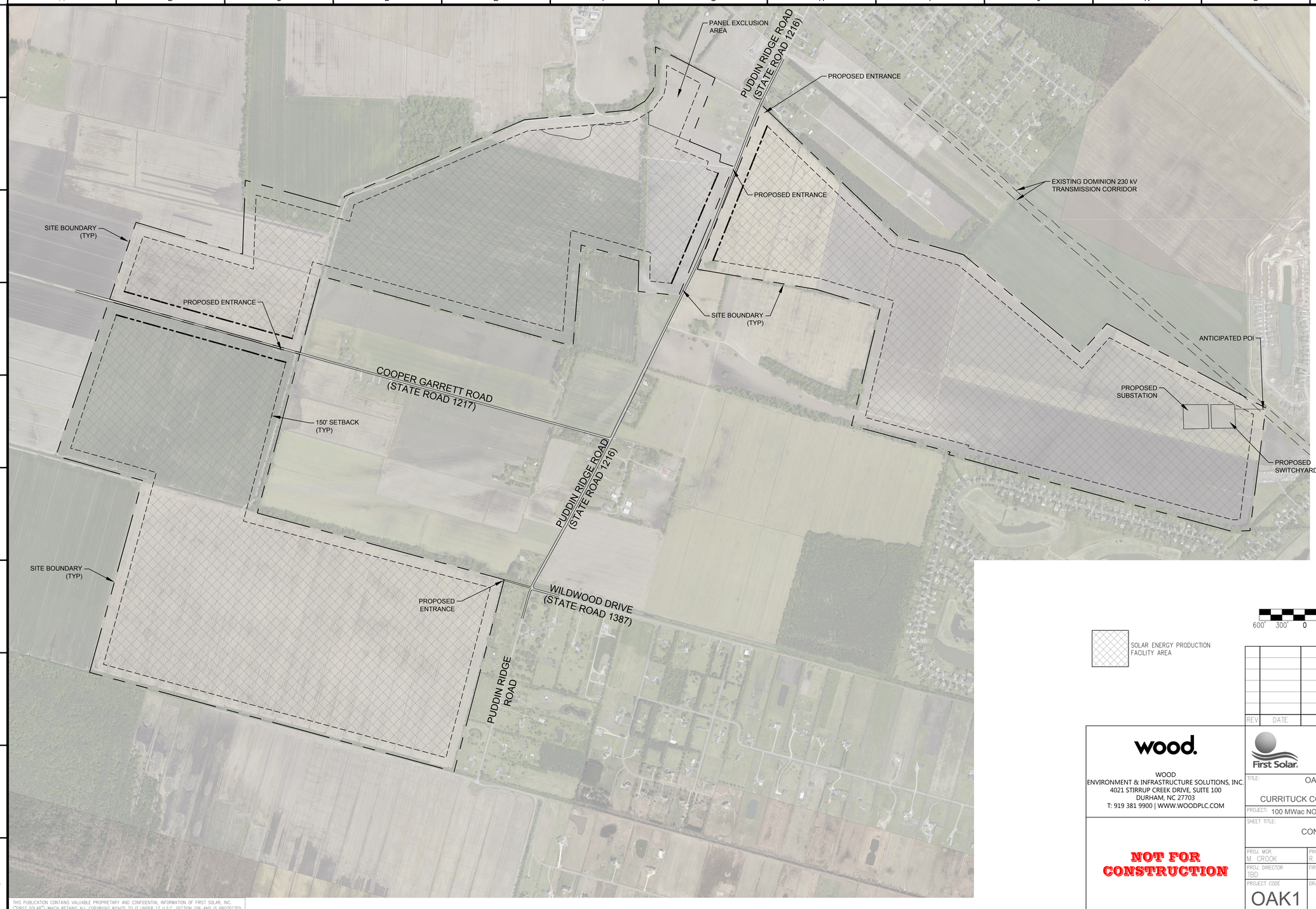
(1) the annual report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and

(2) the information contained in the annual report fairly presents, in all material respects, the financial condition and results of operations of First Solar, Inc. for the periods presented therein.

February 20, 2020	By:	/s/ MARK R. WIDMAR
	Name:	Mark R. Widmar
	Title:	Chief Executive Officer

February 20, 2020	By:	/s/ ALEXANDER R. BRADLEY
	Name:	Alexander R. Bradley
	Title:	Chief Financial Officer

Oak Trail Solar, LLC
Application Addendum 4



REV	DATE	REVISION DESCRIPTION	BY	CHK	APP

wood.

WOOD
ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC.
4021 STIRRUP CREEK DRIVE, SUITE 100
DURHAM, NC 27703
T: 919 381 9900 | WWW.WOODPLC.COM

First Solar

FIRST SOLAR, LLC
350 W WASHINGTON, SUITE 600
TEMPE, AZ 77079
PHONE: (602) 414-9300
WWW.FIRSTSOLAR.COM

TITLE: OAK TRAIL SOLAR, LLC

CURRITUCK COUNTY, NORTH CAROLINA, USA

PROJECT: 100 MWac NOMINAL CAPACITY SOLAR PV SYSTEM

SHEET TITLE: CONCEPTUAL SITE PLAN

NOT FOR CONSTRUCTION

PROJ. MGR.	PROJ. ENGR.	DR. BY	CHK. BY	SCALE:
M. CROOK	R. HARDIN	KMV	MJF	

PROJ. DIRECTOR	FIRST SOLAR JOB No.
TBD	SYS-00XXX

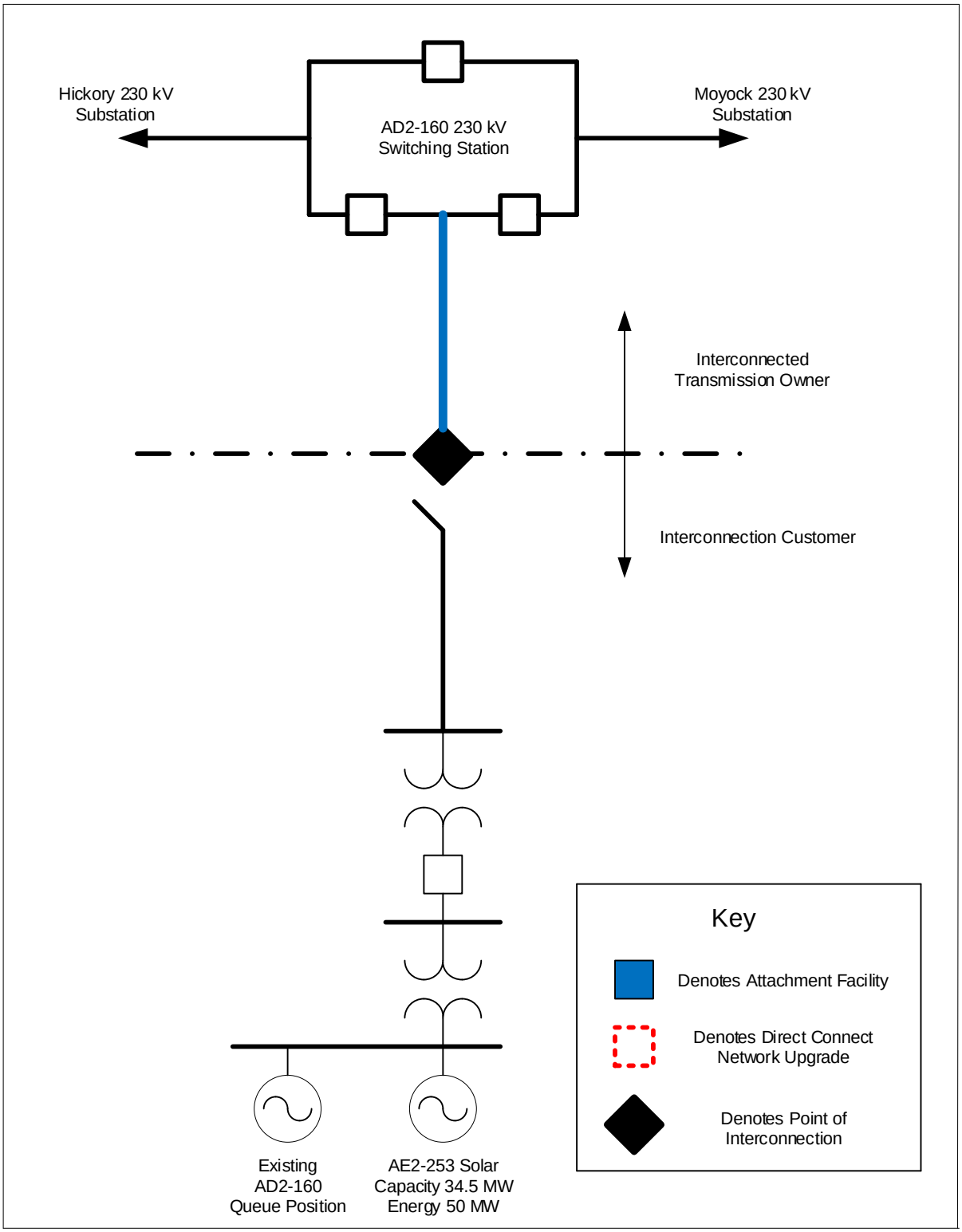
PROJECT CODE	DRAWING No.	REV.
OAK1	1 OF 1	A

THIS PRINT IS NOT TO BE USED FOR CONSTRUCTION UNLESS NOTED AND SIGNED OK FOR CONSTRUCTION ABOVE LAST REVISION.

T:\6706190060 - First Solar - Oak Trail Solar\Drawings\CAD\OAK-SITE PLAN FOOTPRINT.dwg kenneth.veal Sep 03, 2020 - 7:18pm

Attachment 1

System Configuration



STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. EMP-114 SUB 0

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of the Application of Oak Trail Solar, LLC for a Certificate of Public Convenience and Necessity	)	**VERIFICATION**

I, Omar Aboudaher, being duly sworn, do hereby declare that I am duly authorized to act on behalf of the Applicant, that I am familiar with the facts, have read the foregoing Application, and the matters and statements contained therein are true to the best of my personal knowledge.

This 9th day of September, 2020.

DS BD

Omar Aboudaher
Oak Trail Solar, LLC

Sworn and subscribed to before me this 9th day of September, 2020.

Notary Public [Signature of Notary Public]

[Notary Seal]

CHLOE HOGAN
Notary Public, State of Texas
Comm. Expires 03-31-2023
Notary ID 130173630

Chloe Hogan
Name of Notary Public [typewritten or printed]

My Commission expires 3-31-2023