
UNITED STATES SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549
Form 10-Q

(Mark one)

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

For the quarterly period ended September 30, 2017

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®
First Solar, Inc.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of incorporation or organization)

20-4623678

(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)

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

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

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, 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
Smaller reporting company

Accelerated filer
Emerging growth company

Non-accelerated filer
(Do not check if a smaller reporting 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 Exchange Act). Yes No

As of October 20, 2017, 104,432,988 shares of the registrant's common stock, \$0.001 par value per share, were outstanding.

FIRST SOLAR, INC. AND SUBSIDIARIES
FORM 10-Q FOR THE QUARTERLY PERIOD ENDED SEPTEMBER 30, 2017

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PART I. FINANCIAL INFORMATION

Item 1. Condensed Consolidated Financial Statements (Unaudited)

FIRST SOLAR, INC. AND SUBSIDIARIES

CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS
(In thousands, except per share amounts)
(Unaudited)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2017	2016	2017	2016
Net sales	\$ 1,087,026	\$ 681,276	\$ 2,602,143	\$ 2,573,768
Cost of sales	795,226	510,368	2,115,266	1,943,198
Gross profit	291,800	170,908	486,877	630,570
Operating expenses:				
Selling, general and administrative	50,546	60,345	147,702	191,624
Research and development	20,850	32,173	64,990	95,291
Production start-up	12,624	752	22,155	807
Restructuring and asset impairments	791	4,314	39,108	89,846
Total operating expenses	84,811	97,584	273,955	377,568
Operating income	206,989	73,324	212,922	253,002
Foreign currency loss, net	(3,968)	(2,296)	(6,166)	(8,259)
Interest income	8,392	5,894	22,364	18,829
Interest expense, net	(4,149)	(5,563)	(19,692)	(17,356)
Other income, net	2,018	6,419	25,180	48,725
Income before taxes and equity in earnings of unconsolidated affiliates	209,282	77,778	234,608	294,941
Income tax (expense) benefit	(7,580)	68,205	26,769	32,886
Equity in earnings of unconsolidated affiliates, net of tax	4,045	4,474	5,462	6,851
Net income	\$ 205,747	\$ 150,457	\$ 266,839	\$ 334,678
Net income per share:				
Basic	\$ 1.97	\$ 1.46	\$ 2.56	\$ 3.27
Diluted	\$ 1.95	\$ 1.45	\$ 2.54	\$ 3.25
Weighted-average number of shares used in per share calculations:				
Basic	104,432	103,339	104,287	102,496
Diluted	105,660	103,684	104,889	103,110

See accompanying notes to these condensed consolidated financial statements.

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

	Three Months Ended		Nine Months Ended	
	September 30,		September 30,	
	2017	2016	2017	2016
Net income	\$ 205,747	\$ 150,457	\$ 266,839	\$ 334,678
Other comprehensive income (loss):				
Foreign currency translation adjustments	4,717	1,418	5,320	4,635
Unrealized gain (loss) on marketable securities and restricted investments, net of tax of \$(23), \$345, \$(373), and \$(831)	1,511	(7,917)	1,244	27,679
Unrealized (loss) gain on derivative instruments, net of tax of \$291, \$59, \$1,291, and \$1	(61)	(276)	(2,513)	2,070
Other comprehensive income (loss)	6,167	(6,775)	4,051	34,384
Comprehensive income	\$ 211,914	\$ 143,682	\$ 270,890	\$ 369,062

See accompanying notes to these condensed consolidated financial statements.

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

	September 30, 2017	December 31, 2016
ASSETS		
Current assets:		
Cash and cash equivalents	\$ 2,019,073	\$ 1,347,155
Marketable securities	699,544	607,991
Accounts receivable trade, net	344,645	266,687
Accounts receivable, unbilled and retainage	455,118	206,739
Inventories	217,555	363,219
Balance of systems parts	20,892	62,776
Project assets	67,263	700,800
Note receivable, affiliate	—	15,000
Prepaid expenses and other current assets	142,404	217,462
Total current assets	3,966,494	3,787,829
Property, plant and equipment, net	940,119	629,142
PV solar power systems, net	454,483	448,601
Project assets	406,396	762,148
Deferred tax assets, net	276,423	255,152
Restricted cash and investments	408,873	371,307
Investments in unconsolidated affiliates and joint ventures	227,661	234,610
Goodwill	14,462	14,462
Other intangibles, net	81,765	87,970
Inventories	110,412	100,512
Notes receivable, affiliates	69,432	54,737
Other assets	98,173	77,898
Total assets	\$ 7,054,693	\$ 6,824,368
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	\$ 130,704	\$ 148,730
Income taxes payable	4,396	12,562
Accrued expenses	317,325	262,977
Current portion of long-term debt	13,451	27,966
Deferred revenue	69,095	308,704
Other current liabilities	44,046	146,942
Total current liabilities	579,017	907,881
Accrued solar module collection and recycling liability	163,707	166,277
Long-term debt	330,209	160,422
Other liabilities	469,364	371,439
Total liabilities	1,542,297	1,606,019
Commitments and contingencies		
Stockholders' equity:		
Common stock, \$0.001 par value per share; 500,000,000 shares authorized; 104,431,990 and 104,034,731 shares issued and outstanding at September 30, 2017 and December 31, 2016, respectively	104	104
Additional paid-in capital	2,788,467	2,765,310
Accumulated earnings	2,729,681	2,462,842
Accumulated other comprehensive loss	(5,856)	(9,907)
Total stockholders' equity	5,512,396	5,218,349
Total liabilities and stockholders' equity	\$ 7,054,693	\$ 6,824,368

See accompanying notes to these condensed consolidated financial statements.

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

	Nine Months Ended September 30,	
	2017	2016
Cash flows from operating activities:		
Net income	\$ 266,839	\$ 334,678
Adjustments to reconcile net income to cash provided by (used in) operating activities:		
Depreciation, amortization and accretion	89,552	172,221
Impairments and net losses on disposal of long-lived assets	33,171	85,251
Share-based compensation	25,527	24,467
Equity in earnings of unconsolidated affiliates, net of tax	(5,462)	(6,851)
Distributions received from equity method investments	17,024	—
Remeasurement of monetary assets and liabilities	(12,464)	(3,711)
Deferred income taxes	(38,499)	(5,399)
Gain on sales of marketable securities and restricted investments	(49)	(38,101)
Noncash consideration from the sale of project assets	—	(20,084)
Other, net	2,572	2,481
Changes in operating assets and liabilities:		
Accounts receivable, trade, unbilled and retainage	(328,556)	2,649
Prepaid expenses and other current assets	35,818	(47,386)
Inventories and balance of systems parts	178,562	75,308
Project assets	969,264	(355,767)
Other assets	(16,453)	(11,045)
Income tax receivable and payable	6,416	(40,548)
Accounts payable	(21,198)	(143,663)
Accrued expenses and other liabilities	(289,919)	(91,709)
Accrued solar module collection and recycling liability	(5,426)	5,536
Net cash provided by (used in) operating activities	906,719	(61,673)
Cash flows from investing activities:		
Purchases of property, plant and equipment	(315,129)	(175,868)
Purchases of marketable securities and restricted investments	(478,324)	(422,607)
Proceeds from sales and maturities of marketable securities and restricted investments	386,309	448,354
Investment in note receivable, affiliate	—	(4,760)
Other investing activities	3,185	(8,893)
Net cash used in investing activities	(403,959)	(163,774)
Cash flows from financing activities:		
Proceeds from borrowings under revolving credit facility	—	550,000
Repayment of long-term debt	(23,683)	(86,250)
Proceeds from borrowings under long-term debt, net of discounts and issuance costs	158,739	23,361
Repayment of sale-leaseback financing	(4,248)	(4,294)
Payments of tax withholdings for restricted shares	(5,114)	(20,388)
Proceeds from commercial letters of credit	43,025	—
Contingent consideration payments and other financing activities	(17,113)	(159)
Net cash provided by financing activities	151,606	462,270
Effect of exchange rate changes on cash, cash equivalents and restricted cash	9,420	6,742
Net increase in cash, cash equivalents and restricted cash	663,786	243,565
Cash, cash equivalents and restricted cash, beginning of the period	1,415,690	1,207,116
Cash, cash equivalents and restricted cash, end of the period	\$ 2,079,476	\$ 1,450,681
Supplemental disclosure of noncash investing and financing activities:		
Property, plant and equipment acquisitions funded by liabilities	\$ 128,450	\$ 29,341
Acquisitions currently or previously funded by liabilities and contingent consideration	\$ 12,212	\$ 23,942
Accrued interest capitalized to long-term debt	\$ 16,786	\$ —

See accompanying notes to these condensed consolidated financial statements.

FIRST SOLAR, INC. AND SUBSIDIARIES

**NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS
(Unaudited)**

1. Basis of Presentation

The accompanying unaudited condensed consolidated financial statements of First Solar, Inc. and its subsidiaries have been prepared in accordance with accounting principles generally accepted in the United States of America (“U.S. GAAP”) for interim financial information and pursuant to the instructions to Form 10-Q and Article 10 of Regulation S-X of the Securities and Exchange Commission (the “SEC”). Accordingly, these interim financial statements do not include all of the information and footnotes required by U.S. GAAP for annual financial statements. In the opinion of First Solar management, all adjustments (consisting only of normal recurring adjustments) considered necessary for a fair statement have been included. Operating results for the three and nine months ended September 30, 2017 are not necessarily indicative of the results that may be expected for the year ending December 31, 2017 or for any other period. The condensed consolidated balance sheet at December 31, 2016 has been derived from the audited consolidated financial statements at that date, but does not include all of the information and footnotes required by U.S. GAAP for complete financial statements. These interim financial statements and notes should be read in conjunction with the audited financial statements and notes thereto for the year ended December 31, 2016 included in our Annual Report on Form 10-K, which has been filed with the SEC.

Certain prior year balances have been reclassified to conform to the current year presentation. Such reclassifications primarily relate to the adoptions of Accounting Standards Update (“ASU”) 2016-18, ASU 2016-09, and ASU 2014-09 as further described in Note 3. “Recent Accounting Pronouncements” and Note 14. “Revenue from Contracts with Customers” to our condensed consolidated financial statements.

Unless expressly stated or the context otherwise requires, the terms “the Company,” “we,” “us,” “our,” and “First Solar” refer to First Solar, Inc. and its subsidiaries.

2. Summary of Significant Accounting Policies

Use of Estimates. The preparation of condensed consolidated financial statements in conformity with U.S. GAAP requires us to make estimates and assumptions that affect the amounts reported in our condensed 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, performance guarantees, indemnifications, accounting for income taxes, long-lived asset impairments, and testing goodwill. Despite our intention to establish accurate estimates and reasonable assumptions, actual results could differ materially from such estimates and assumptions.

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; engineering, procurement, and construction services (“EPC”); 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.

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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 accordingly 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.

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 for retainage and reclassify such amounts to “Accounts receivable trade, net.”

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 power purchase agreements (“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 (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 such project assets as current until the sale is completed and we have met all of the criteria to recognize 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, which at the time of sale and meeting all revenue recognition criteria will be recorded within cost of sales. 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, ecological, permitting, market pricing, or regulatory conditions that may impact the project. Such changes could cause the costs of the project to increase or the selling price of the project to decrease. If a project is not considered recoverable, we impair the respective project assets and adjust the carrying value to the estimated fair value, with the resulting impairment recorded within “Selling, general and administrative” expense.

Deferred 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. We recognize deferred revenue as net sales after we have transferred control of the goods or services to the customer and all revenue recognition criteria are met.

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 balance of systems (“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.

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Revenue Recognition – Solar Power System Sales and/or Engineering, Procurement, and Construction 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, including those in which we may receive consideration of a noncontrolling interest, when combined with EPC services represents a single performance obligation for the development and construction of a single generation asset. For such sales arrangements, we recognize revenue 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, after consideration of our customers' commitment to perform its 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 of unconsolidated affiliates, net of tax."

In applying cost based input methods of revenue recognition, we use the actual costs incurred relative to the total estimated costs (including solar module costs) to determine our progress towards contract completion and to calculate the corresponding amount of revenue and gross profit to recognize. Cost based input methods of revenue recognition are considered a faithful depiction of our efforts to satisfy 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 towards 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 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 year 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 operations and maintenance ("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, North American Electric Reliability Corporation (or "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 and billed 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 of 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.

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Revenue Recognition – Energy Generation. We typically recognize revenue for energy generated and sold by PV solar power systems under Accounting Standards Codification (“ASC”) 840, *Leases*, consistent with the classification of the associated PPAs. Accordingly, we recognize revenue each period based on the volume of energy delivered to the customer (i.e., the PPA offtaker). For energy generated and sold by PV solar power systems on an open contract basis, we recognize revenue at the point in time the energy is delivered to the grid.

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.

See Note 2. “Summary of Significant Accounting Policies” to our consolidated financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2016 for a summary of our other significant accounting policies.

3. Recent Accounting Pronouncements

In August 2017, the Financial Accounting Standard 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. ASU 2017-12 is effective for fiscal years and interim periods within those years beginning after December 15, 2018, and early adoption is permitted. We are currently evaluating the impact ASU 2017-12 will have on our consolidated financial statements and associated disclosures.

In January 2017, the FASB issued ASU 2017-04, *Goodwill and Other (Topic 350) – Simplifying the Test for Goodwill Impairment*. ASU 2017-04 simplifies the subsequent measurement of goodwill by eliminating Step 2 of the goodwill impairment test. In computing the implied fair value of goodwill under Step 2, an entity had to perform procedures to determine the fair value at the impairment testing date of its assets and liabilities (including unrecognized assets and liabilities) following the procedure that would be required in determining the fair value of assets acquired and liabilities assumed in a business combination. Under ASU 2017-04, an entity should perform its goodwill impairment test by comparing the fair value of a reporting unit with its carrying amount and then recognize an impairment charge, as necessary, for the amount by which the carrying amount exceeds the reporting unit’s fair value, not to exceed the total amount of goodwill allocated to that reporting unit. As a result of our adoption of ASU 2017-04 in the first quarter of 2017, we will eliminate Step 2 of future goodwill impairment tests.

In November 2016, the FASB issued ASU 2016-18, *Statement of Cash Flows (Topic 230) – Restricted Cash*. ASU 2016-18 requires that the statement of cash flows explain the change during the period in the total of cash, cash equivalents, and amounts generally described as restricted cash or restricted cash equivalents when reconciling the beginning-of-period and end-of-period total amounts shown on the statement of cash flows. As a result of the adoption of ASU 2016-18 in the fourth quarter of 2016, we began including amounts generally described as restricted cash and restricted cash equivalents with cash and cash equivalents when reconciling the beginning-of-period and end-of-period total amounts shown on the statement of cash flows. See the tables at the end of this note for the effects of the adoption of ASU 2016-18 on our condensed consolidated statement of cash flows for the nine months ended September 30, 2016.

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

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

In March 2016, the FASB issued ASU 2016-09, *Compensation – Stock Compensation (Topic 718) – Improvements to Employee Share-Based Payment Accounting*, to simplify several aspects of the accounting for share-based payment transactions, including income tax consequences, accounting for forfeitures, classification of awards as either equity or liabilities, and classification on the statement of cash flows. Our adoption of ASU 2016-09 in the fourth quarter of 2016 resulted in the recognition of certain deferred tax assets for excess tax benefits that had previously not been recognized, as such benefits did not reduce our income taxes payable in prior periods, and the recognition of amounts for previously estimated forfeitures of share-based awards. As a result of the adoption, we also adjusted our condensed consolidated statement of cash flows to eliminate the reclassification of excess tax benefits to cash flows from financing activities and to present payments of tax withholdings for share-based awards as cash flows from financing activities. See the tables at the end of this note for the effects of the adoption of ASU 2016-09 on our condensed consolidated financial statements for the three and nine months ended September 30, 2016.

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

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

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

We adopted ASU 2014-09 in the first quarter of 2017 using the full retrospective method. This adoption primarily affected our systems business sales arrangements previously accounted for under ASC 360-20, which had required us to evaluate whether such arrangements had any forms of continuing involvement that may have affected the revenue or profit recognition of the transactions, including arrangements with prohibited forms of continuing involvement. When such forms of continuing involvement were present, we reduced the potential profit on the applicable project sale by our maximum exposure to loss.

Our adoption of ASU 2014-09, which supersedes the real estate sales guidance under ASC 360-20, generally requires us to recognize revenue and profit from our systems business sales arrangements earlier and in a more linear fashion than our historical practice under ASC 360-20, including the estimation of certain profits that would otherwise have been deferred. Additionally, for systems business sales arrangements 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 of unconsolidated affiliates, net of tax.” Following the adoption of ASU 2014-09, the revenue recognition for our other sales arrangements, including sales of solar modules and O&M services, remained materially consistent with our historical practice. See the tables at the end of this note for the effects of the adoption of ASU 2014-09 on our condensed consolidated financial statements as of December 31, 2016 and for the three and nine months ended September 30, 2016. See Note 2. “Summary of Significant Accounting Policies” to our condensed consolidated financial statements for further discussion of the effects of the adoption of ASU 2014-09 on our significant accounting policies.

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Adjustments to Previously Reported Financial Statements from the Adoption of Accounting Pronouncements

The following table presents the effect of the adoption of ASU 2014-09 on our condensed consolidated balance sheet as of December 31, 2016 (in thousands):

	December 31, 2016		
	As Reported	Adoption of ASU 2014-09	As Adjusted
Accounts receivable, unbilled and retainage	\$ 205,530	\$ 1,209	\$ 206,739
Deferred project costs	701,105	(701,105)	—
Project assets, current	—	700,800	700,800
Prepaid expenses and other current assets	217,157	305	217,462
Total current assets	3,786,620	1,209	3,787,829
Project assets and deferred project costs	800,770	(800,770)	—
Project assets, noncurrent	—	762,148	762,148
Deferred tax assets, net	252,655	2,497	255,152
Investments in unconsolidated affiliates and joint ventures	242,361	(7,751)	234,610
Other assets	78,076	(178)	77,898
Total assets	6,867,213	(42,845)	6,824,368
Income taxes payable	5,288	7,274	12,562
Billings in excess of costs and estimated earnings	115,623	(115,623)	—
Payments and billings for deferred project costs	284,440	(284,440)	—
Deferred revenue	—	308,704	308,704
Other current liabilities	54,683	92,259	146,942
Total current liabilities	899,707	8,174	907,881
Other liabilities	428,120	(56,681)	371,439
Total liabilities	1,654,526	(48,507)	1,606,019
Additional paid-in capital	2,759,211	6,099	2,765,310
Accumulated earnings	2,463,279	(437)	2,462,842
Total stockholders' equity	5,212,687	5,662	5,218,349
Total liabilities and stockholders' equity	6,867,213	(42,845)	6,824,368

The following table presents the effect of the adoptions of ASU 2016-09 and ASU 2014-09 on our condensed consolidated statements of operations for the three and nine months ended September 30, 2016 (in thousands, except per share amounts):

	Three Months Ended September 30, 2016			
	As Reported	Adoption of ASU 2016-09	Adoption of ASU 2014-09	As Adjusted
Net sales	\$ 688,029	\$ —	\$ (6,753)	\$ 681,276
Cost of sales	501,749	—	8,619	510,368
Gross profit	186,280	—	(15,372)	170,908
Operating income	88,696	—	(15,372)	73,324
Income before taxes and equity in earnings of unconsolidated affiliates	93,150	—	(15,372)	77,778
Income tax benefit	50,522	15,170	2,513	68,205
Equity in earnings of unconsolidated affiliates, net of tax	10,474	—	(6,000)	4,474
Net income	154,146	15,170	(18,859)	150,457
Comprehensive income	147,371	15,170	(18,859)	143,682
Basic net income per share	\$ 1.49	\$ 0.15	\$ (0.18)	\$ 1.46
Diluted net income per share	\$ 1.49	\$ 0.14	\$ (0.18)	\$ 1.45

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	Nine Months Ended September 30, 2016			
	As Reported	Adoption of ASU 2016-09	Adoption of ASU 2014-09	As Adjusted
Net sales	\$ 2,470,894	\$ —	\$ 102,874	\$ 2,573,768
Cost of sales	1,830,504	—	112,694	1,943,198
Gross profit	640,390	—	(9,820)	630,570
Operating income	262,822	—	(9,820)	253,002
Income before taxes and equity in earnings of unconsolidated affiliates	304,761	—	(9,820)	294,941
Income tax benefit	7,711	23,777	1,398	32,886
Equity in earnings of unconsolidated affiliates, net of tax	25,647	—	(18,796)	6,851
Net income	338,119	23,777	(27,218)	334,678
Comprehensive income	372,503	23,777	(27,218)	369,062
Basic net income per share	\$ 3.30	\$ 0.23	\$ (0.26)	\$ 3.27
Diluted net income per share	\$ 3.28	\$ 0.23	\$ (0.26)	\$ 3.25

The following table presents the effect of the adoptions of ASU 2016-18, ASU 2016-09, and ASU 2014-09 on our condensed consolidated statement of cash flows for the nine months ended September 30, 2016 (in thousands):

	Nine Months Ended September 30, 2016				
	As Reported	Adoption of ASU 2016-18	Adoption of ASU 2016-09	Adoption of ASU 2014-09	As Adjusted
Net income	\$ 338,119	\$ —	\$ 23,777	\$ (27,218)	\$ 334,678
Adjustments to reconcile net income to cash used in operating activities:					
Equity in earnings of unconsolidated affiliates, net of tax	(25,647)	—	—	18,796	(6,851)
Remeasurement of monetary assets and liabilities	(4,054)	343	—	—	(3,711)
Excess tax benefits from share-based compensation arrangements	(18,169)	—	18,169	—	—
Noncash consideration from the sale of project assets	—	—	—	(20,084)	(20,084)
Changes in operating assets and liabilities:					
Accounts receivable, trade, unbilled and retainage	(22,791)	—	—	25,440	2,649
Prepaid expenses and other current assets	(47,300)	—	—	(86)	(47,386)
Project assets	(469,988)	—	—	114,221	(355,767)
Other assets	(11,234)	—	—	189	(11,045)
Income tax receivable and payable	(14,798)	—	(24,352)	(1,398)	(40,548)
Accrued expenses and other liabilities	(2,812)	—	20,963	(109,860)	(91,709)
Net cash used in operating activities	(100,573)	343	38,557	—	(61,673)
Change in restricted cash	44,171	(44,171)	—	—	—
Net cash used in investing activities	(119,603)	(44,171)	—	—	(163,774)
Excess tax benefits from share-based compensation arrangements	18,169	—	(18,169)	—	—
Payments of tax withholdings for restricted shares	—	—	(20,388)	—	(20,388)
Net cash provided by financing activities	500,827	—	(38,557)	—	462,270
Net increase in cash, cash equivalents and restricted cash	287,393	(43,828)	—	—	243,565
Cash, cash equivalents and restricted cash, beginning of the period	1,126,826	80,290	—	—	1,207,116
Cash, cash equivalents and restricted cash, end of the period	1,414,219	36,462	—	—	1,450,681

4. Restructuring and Asset Impairments

Cadmium Telluride Module Manufacturing and Corporate Restructuring

In November 2016, our board of directors approved a set of initiatives intended to accelerate our transition to Series 6 module manufacturing and restructure our operations to reduce costs and better align the organization with our long-term strategic plan. Accordingly, we expect to upgrade and replace our existing manufacturing fleet through 2019 with Series 6 manufacturing equipment, thereby enabling the production of solar modules with a larger form factor, better product attributes, and a lower cost structure.

As part of these initiatives, we incurred net charges of \$39.1 million during the nine months ended September 30, 2017, which included (i) \$25.7 million of charges, primarily related to net losses on the disposition of previously impaired Series 4 and Series 5 manufacturing equipment, (ii) \$6.8 million of severance benefits to terminated employees, and (iii) \$6.6 million of net miscellaneous charges, primarily related to contract terminations, the write-off of operating supplies, and other Series 4 manufacturing exit costs. During the three months ended September 30, 2017, we incurred net charges of \$0.8 million, primarily as a result of net losses on the disposition of the aforementioned manufacturing equipment. Substantially all amounts associated with these restructuring and asset impairment charges related to our components segment and were classified as “Restructuring and asset impairments” on our condensed consolidated statements of operations. We expect to incur up to \$5 million of additional charges in 2017 as we continue the transition to Series 6 module manufacturing.

The following table summarizes our cadmium telluride (“CdTe”) module manufacturing and corporate restructuring activity recorded during the nine months ended September 30, 2017 and the remaining liability balances at September 30, 2017 (in thousands):

	<u>Asset Impairments</u>	<u>Severance</u>	<u>Other</u>	<u>Total</u>
Ending liability balance at December 31, 2016	\$ —	\$ 7,865	\$ 550	\$ 8,415
Charges to income	25,704	6,781	6,623	39,108
Cash payments	—	(14,115)	(6,314)	(20,429)
Non-cash amounts	(25,704)	—	(772)	(26,476)
Ending liability balance at September 30, 2017	<u>\$ —</u>	<u>\$ 531</u>	<u>\$ 87</u>	<u>\$ 618</u>

During the three and nine months ended September 30, 2016, we incurred charges of \$2.9 million and \$3.8 million, respectively, for severance benefits to terminated employees and certain other actions associated with related restructuring initiatives.

Crystalline Silicon Module Manufacturing Restructuring

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

In connection with these restructuring activities, we incurred charges of \$86.0 million during the nine months ended September 30, 2016, which included (i) \$35.8 million of impairment charges related to certain crystalline silicon module manufacturing equipment considered abandoned for accounting purposes, (ii) \$35.8 million of impairment charges for developed technology intangible assets associated with our crystalline silicon module technology, (iii) \$6.1 million of goodwill impairment charges from the disposal of our crystalline silicon components reporting unit, and (iv) \$8.3 million of miscellaneous charges related to certain contract manufacturing agreements and the write-off of operating supplies. During the three months ended September 30, 2016, we incurred charges of \$1.4 million for contract manufacturing agreements and long-lived asset impairments. All amounts associated with these charges related to our components segment and were classified as “Restructuring and asset impairments” on our condensed consolidated statements of operations.

5. Business Acquisitions

Enki Technology

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

6. Cash, Cash Equivalents, and Marketable Securities

Cash, cash equivalents, and marketable securities consisted of the following at September 30, 2017 and December 31, 2016 (in thousands):

	September 30, 2017	December 31, 2016
Cash and cash equivalents:		
Cash	\$ 1,968,818	\$ 1,347,155
Money market funds	50,255	—
Total cash and cash equivalents	2,019,073	1,347,155
Marketable securities:		
Foreign debt	172,249	296,819
Foreign government obligations	198,307	271,172
U.S. debt	73,988	—
Time deposits	255,000	40,000
Total marketable securities	699,544	607,991
Total cash, cash equivalents, and marketable securities	\$ 2,718,617	\$ 1,955,146

We classify our marketable securities as available-for-sale. Accordingly, we record them at fair value and account for the net unrealized gains and losses as part of “Accumulated other comprehensive loss” until realized. We record realized gains and losses on the sale of our marketable securities in “Other income, net” computed using the specific identification method. During the nine months ended September 30, 2017, we sold marketable securities for proceeds of \$118.3 million and realized gains of less than \$0.1 million on such sales. During the three and nine months ended September 30, 2016, we sold marketable securities for proceeds of \$135.2 million and \$159.2 million, respectively, and realized gains of \$0.3 million on such sales. See Note 10. “Fair Value Measurements” to our condensed 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 September 30, 2017 and December 31, 2016 (in thousands):

	As of September 30, 2017			
	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
Foreign debt	\$ 173,111	\$ —	\$ 862	\$ 172,249
Foreign government obligations	199,009	—	702	198,307
U.S. debt	74,016	2	30	73,988
Time deposits	255,000	—	—	255,000
Total	\$ 701,136	\$ 2	\$ 1,594	\$ 699,544

	As of December 31, 2016			
	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
Foreign debt	\$ 298,085	\$ 2	\$ 1,268	\$ 296,819
Foreign government obligations	272,357	—	1,185	271,172
Time deposits	40,000	—	—	40,000
Total	\$ 610,442	\$ 2	\$ 2,453	\$ 607,991

As of September 30, 2017, we identified eight investments totaling \$119.2 million that had been in a loss position for a period of time greater than 12 months with unrealized losses of \$0.9 million. As of December 31, 2016, we identified three investments totaling \$51.2 million that had been in a loss position for a period of time greater than 12 months with unrealized losses of \$0.1 million. The unrealized losses were primarily due to increases in interest rates relative to rates at the time of purchase. Based on the underlying credit quality of the investments, we do not intend to sell these securities prior to the recovery of our cost basis. Therefore, we did not consider these securities to be other-than-temporarily impaired. All of our available-for-sale marketable securities are subject to a periodic impairment review. We did not identify any of our marketable securities as other-than-temporarily impaired as of September 30, 2017 and December 31, 2016.

The following tables show unrealized losses and fair values for those marketable securities that were in an unrealized loss position as of September 30, 2017 and December 31, 2016, aggregated by major security type and the length of time the marketable securities have been in a continuous loss position (in thousands):

	As of September 30, 2017					
	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	\$ 102,806	\$ 288	\$ 64,443	\$ 574	\$ 167,249	\$ 862
Foreign government obligations	143,546	422	54,761	280	198,307	702
U.S. debt	63,981	30	—	—	63,981	30
Total	\$ 310,333	\$ 740	\$ 119,204	\$ 854	\$ 429,537	\$ 1,594

	As of December 31, 2016					
	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	\$ 234,332	\$ 1,123	\$ 51,236	\$ 145	\$ 285,568	\$ 1,268
Foreign government obligations	272,503	1,185	—	—	272,503	1,185
Total	\$ 506,835	\$ 2,308	\$ 51,236	\$ 145	\$ 558,071	\$ 2,453

The contractual maturities of our marketable securities as of September 30, 2017 were as follows (in thousands):

	Fair Value
One year or less	\$ 454,961
One year to two years	154,847
Two years to three years	89,736
Total	\$ 699,544

7. Restricted Cash and Investments

Restricted cash and investments consisted of the following at September 30, 2017 and December 31, 2016 (in thousands):

	September 30, 2017	December 31, 2016
Restricted cash	\$ 43,851	\$ 31,381
Restricted investments	365,022	339,926
Total restricted cash and investments (1)	<u>\$ 408,873</u>	<u>\$ 371,307</u>

(1) There was an additional \$16.6 million and \$37.2 million of restricted cash included within “Prepaid expenses and other current assets” at September 30, 2017 and December 31, 2016, respectively.

At September 30, 2017 and December 31, 2016, 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. Restricted cash for our letters of credit is classified as current or noncurrent based on the maturity date of the corresponding letter of credit. See Note 13. “Commitments and Contingencies” to our condensed consolidated financial statements for further discussion related to our letters of credit. Restricted cash for project construction, operation, and financing is classified as current or noncurrent based on the projected use of the restricted funds.

At September 30, 2017 and December 31, 2016, our restricted investments consisted of long-term marketable securities that were held in custodial accounts to fund the estimated future costs associated with collecting and recycling modules covered under our solar module collection and recycling program. We classify our restricted investments as available-for-sale. Accordingly, we record them at fair value and account for the net unrealized gains and losses as a part of “Accumulated other comprehensive loss” until realized. We record realized gains and losses on the sale of our restricted investments in “Other income, net” computed using the specific identification method. During the nine months ended September 30, 2016, we sold certain restricted investments for proceeds of \$106.1 million and realized gains of \$37.8 million on such sales as part of an effort to align the currencies of the investments with those of the corresponding collection and recycling liabilities. Restricted investments are classified as noncurrent as the underlying accrued solar module collection and recycling liability is also noncurrent in nature. See Note 10. “Fair Value Measurements” to our condensed consolidated financial statements for information about the fair value of our restricted investments.

As necessary, we fund any incremental amounts for our estimated collection and recycling obligations within 90 days of the end of each year. We determine the funding requirement, if any, based on estimated costs of collecting and recycling covered modules, estimated rates of return on our restricted investments, and an estimated solar module life of 25 years less amounts already funded in prior years. During 2016, substantially all of our module sales were not covered under our solar module collection and recycling program, and as a result, no incremental funding for the program was required in 2017. 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. Only the trustee can distribute funds from the custodial accounts, and these funds cannot be accessed for any purpose other than to cover qualified costs of module collection and recycling, either by us or a third party performing the required collection and recycling services. Investments in the trust must meet certain investment quality criteria comparable to highly rated government or agency bonds.

The following tables summarize the unrealized gains and losses related to our restricted investments, by major security type, as of September 30, 2017 and December 31, 2016 (in thousands):

	As of September 30, 2017			
	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
Foreign government obligations	\$ 124,083	\$ 60,279	\$ —	\$ 184,362
U.S. government obligations	173,269	12,291	4,900	180,660
Total	<u>\$ 297,352</u>	<u>\$ 72,570</u>	<u>\$ 4,900</u>	<u>\$ 365,022</u>

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

As of September 30, 2017, the contractual maturities of our restricted investments were between 12 years and 19 years.

8. Consolidated Balance Sheet Details

Accounts receivable trade, net

Accounts receivable trade, net consisted of the following at September 30, 2017 and December 31, 2016 (in thousands):

	September 30, 2017	December 31, 2016
Accounts receivable trade, gross	\$ 347,209	\$ 266,687
Allowance for doubtful accounts	(2,564)	—
Accounts receivable trade, net	<u>\$ 344,645</u>	<u>\$ 266,687</u>

At September 30, 2017 and December 31, 2016, \$51.3 million and \$12.2 million, respectively, of our accounts receivable trade, net were secured by letters of credit, bank guarantees, or other forms of financial security issued by creditworthy financial institutions.

Accounts receivable, unbilled and retainage

Accounts receivable, unbilled and retainage consisted of the following at September 30, 2017 and December 31, 2016 (in thousands):

	September 30, 2017	December 31, 2016
Accounts receivable, unbilled	\$ 451,526	\$ 200,474
Retainage	3,592	6,265
Accounts receivable, unbilled and retainage	<u>\$ 455,118</u>	<u>\$ 206,739</u>

Inventories

Inventories consisted of the following at September 30, 2017 and December 31, 2016 (in thousands):

	September 30, 2017	December 31, 2016
Raw materials	\$ 142,819	\$ 148,222
Work in process	9,756	13,204
Finished goods	175,392	302,305
Inventories	<u>\$ 327,967</u>	<u>\$ 463,731</u>
Inventories – current	\$ 217,555	\$ 363,219
Inventories – noncurrent (1)	\$ 110,412	\$ 100,512

- (1) 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.

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Prepaid expenses and other current assets

Prepaid expenses and other current assets consisted of the following at September 30, 2017 and December 31, 2016 (in thousands):

	September 30, 2017	December 31, 2016
Prepaid expenses	\$ 33,862	\$ 42,007
Prepaid income taxes	21,798	35,336
Restricted cash	16,552	37,154
Derivative instruments	9,644	6,078
Value added tax receivables	8,463	22,308
Other current assets	52,085	74,579
Prepaid expenses and other current assets	<u>\$ 142,404</u>	<u>\$ 217,462</u>

Property, plant and equipment, net

Property, plant and equipment, net consisted of the following at September 30, 2017 and December 31, 2016 (in thousands):

	September 30, 2017	December 31, 2016
Land	\$ 8,135	\$ 7,839
Buildings and improvements	423,031	378,981
Machinery and equipment	1,060,654	1,444,442
Office equipment and furniture	155,351	147,833
Leasehold improvements	48,938	53,552
Construction in progress	416,684	93,164
Stored assets (1)	—	17,995
Property, plant and equipment, gross	2,112,793	2,143,806
Accumulated depreciation	(1,172,674)	(1,514,664)
Property, plant and equipment, net	<u>\$ 940,119</u>	<u>\$ 629,142</u>

(1) Consisted of certain machinery and equipment (“stored assets”) that were originally intended for use in previously planned manufacturing capacity expansions. The majority of the stored assets remaining at December 31, 2016 were repurposed for Series 6 module manufacturing.

Depreciation of property, plant and equipment was \$22.4 million and \$71.1 million for the three and nine months ended September 30, 2017, respectively, and \$51.6 million and \$158.6 million for the three and nine months ended September 30, 2016, respectively.

PV solar power systems, net

PV solar power systems, net consisted of the following at September 30, 2017 and December 31, 2016 (in thousands):

	September 30, 2017	December 31, 2016
PV solar power systems, gross	\$ 485,519	\$ 464,581
Accumulated depreciation	(31,036)	(15,980)
PV solar power systems, net	<u>\$ 454,483</u>	<u>\$ 448,601</u>

During the nine months ended September 30, 2017, we placed \$13.3 million of projects in service, including a project in the Asia-Pacific region. Depreciation of PV solar power systems was \$5.1 million and \$14.9 million for the three and nine months ended September 30, 2017, respectively, and \$4.4 million and \$6.8 million for the three and nine months ended September 30, 2016, respectively.

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Capitalized interest

The cost of constructing facilities, equipment, and project assets includes interest costs incurred during the assets' construction period. The components of interest expense and capitalized interest were as follows during the three and nine months ended September 30, 2017 and 2016 (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2017	2016	2017	2016
Interest cost incurred	\$ (4,775)	\$ (5,998)	\$ (20,630)	\$ (20,365)
Interest cost capitalized – property, plant and equipment	—	314	—	1,381
Interest cost capitalized – project assets	626	121	938	1,628
Interest expense, net	\$ (4,149)	\$ (5,563)	\$ (19,692)	\$ (17,356)

Project assets

Project assets consisted of the following at September 30, 2017 and December 31, 2016 (in thousands):

	September 30, 2017	December 31, 2016
Project assets – development costs, including project acquisition and land costs	\$ 282,278	\$ 444,264
Project assets – construction costs	191,381	1,018,684
Project assets	\$ 473,659	\$ 1,462,948
Project assets – current	\$ 67,263	\$ 700,800
Project assets – noncurrent	\$ 406,396	\$ 762,148

Other assets

Other assets consisted of the following at September 30, 2017 and December 31, 2016 (in thousands):

	September 30, 2017	December 31, 2016
Deferred rent	\$ 26,879	\$ 27,160
Notes receivable (1)	10,558	7,385
Income taxes receivable	4,321	4,230
Other	56,415	39,123
Other assets	\$ 98,173	\$ 77,898

- (1) In April 2009, we entered into a credit facility agreement with a solar power project entity of one of our customers for an available amount of €17.5 million to provide financing for a PV solar power system. The credit facility bears interest at 8.0% per annum, payable quarterly, with the full amount due in December 2026. As of September 30, 2017 and December 31, 2016, the balance outstanding on the credit facility was €7.0 million (\$8.3 million and \$7.4 million, respectively).

Goodwill

Goodwill for the relevant reporting unit consisted of the following at September 30, 2017 and December 31, 2016 (in thousands):

	December 31, 2016	Acquisitions (Impairments)	September 30, 2017
Components	\$ 407,827	\$ —	\$ 407,827
Accumulated impairment losses	(393,365)	—	(393,365)
Goodwill	\$ 14,462	\$ —	\$ 14,462

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

Other intangibles, net

Other intangibles, net consists of developed technologies from prior business acquisitions, certain PPAs acquired after the associated PV solar power systems were placed in service, our internally-generated intangible assets, substantially all of which were patents on technologies related to our products and production processes, and IPR&D related to our Enki acquisition as described in Note 5. “Business Acquisitions” to our condensed consolidated financial statements. We record an asset for patents, after the patent has been issued, based on the legal, filing, and other costs incurred to secure them. We amortize intangible assets on a straight-line basis over their estimated useful lives once the intangible assets meet the criteria to be amortized.

The following tables summarize our intangible assets at September 30, 2017 and December 31, 2016 (in thousands):

	September 30, 2017			
	Gross Amount	Accumulated Amortization	Accumulated Impairments	Net Amount
Developed technology	\$ 76,959	\$ (22,298)	\$ —	\$ 54,661
Power purchase agreements	6,486	(243)	—	6,243
Patents	6,538	(2,932)	—	3,606
In-process research and development	17,255	—	—	17,255
Other intangibles, net	<u>\$ 107,238</u>	<u>\$ (25,473)</u>	<u>\$ —</u>	<u>\$ 81,765</u>

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

Amortization expense for our intangible assets was \$2.1 million and \$6.2 million for the three and nine months ended September 30, 2017, respectively, and \$2.1 million and \$8.1 million for the three and nine months ended September 30, 2016, respectively.

Accrued expenses

Accrued expenses consisted of the following at September 30, 2017 and December 31, 2016 (in thousands):

	September 30, 2017	December 31, 2016
Accrued property, plant and equipment	\$ 112,084	\$ 14,828
Accrued compensation and benefits	51,731	47,877
Accrued project assets	48,248	71,164
Product warranty liability (1)	31,016	40,079
Accrued inventory	15,211	13,085
Other	59,035	75,944
Accrued expenses	<u>\$ 317,325</u>	<u>\$ 262,977</u>

(1) See Note 13. “Commitments and Contingencies” to our condensed consolidated financial statements for discussion of our “Product warranty liability.”

[Table of Contents](#)**Other current liabilities**

Other current liabilities consisted of the following at September 30, 2017 and December 31, 2016 (in thousands):

	September 30, 2017	December 31, 2016
Derivative instruments	\$ 16,851	\$ 6,642
Contingent consideration (1)	9,106	19,620
Financing liability (2)	5,173	5,219
Indemnification liabilities (1)	2,790	100,000
Other	10,126	15,461
Other current liabilities	<u>\$ 44,046</u>	<u>\$ 146,942</u>

(1) See Note 13. “Commitments and Contingencies” to our condensed consolidated financial statements for discussion of our “Indemnification liabilities” and “Contingent consideration” arrangements.

(2) See Note 11. “Investments in Unconsolidated Affiliates and Joint Ventures” to our condensed consolidated financial statements for discussion of the financing liabilities associated with our leaseback of the Maryland Solar project.

Other liabilities

Other liabilities consisted of the following at September 30, 2017 and December 31, 2016 (in thousands):

	September 30, 2017	December 31, 2016
Product warranty liability (1)	\$ 212,678	\$ 212,329
Commercial letter of credit liability (1)	69,951	26,579
Deferred revenue	63,643	—
Financing liability (2)	30,378	33,314
Other taxes payable	25,222	24,099
Derivative instruments	8,697	444
Contingent consideration (1)	3,106	10,472
Other	55,689	64,202
Other liabilities	<u>\$ 469,364</u>	<u>\$ 371,439</u>

(1) See Note 13. “Commitments and Contingencies” to our condensed consolidated financial statements for discussion of our “Product warranty liability,” “Contingent consideration,” and “Commercial letter of credit liability” arrangements.

(2) See Note 11. “Investments in Unconsolidated Affiliates and Joint Ventures” to our condensed consolidated financial statements for discussion of the financing liabilities associated with our leaseback of the Maryland Solar project.

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 (“economic hedges”), we record the changes in fair value directly to earnings. See Note 10. “Fair Value Measurements” to our condensed consolidated financial statements for information about the techniques we use to measure the fair value of our derivative instruments.

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The following tables present the fair values of derivative instruments included in our condensed consolidated balance sheets as of September 30, 2017 and December 31, 2016 (in thousands):

	September 30, 2017		
	Prepaid Expenses and Other Current Assets	Other Current Liabilities	Other Liabilities
Derivatives designated as hedging instruments:			
Foreign exchange forward contracts	\$ 267	\$ 10,777	\$ —
Total derivatives designated as hedging instruments	\$ 267	\$ 10,777	\$ —
Derivatives not designated as hedging instruments:			
Foreign exchange forward contracts	\$ 9,377	\$ 6,074	\$ 3,182
Interest rate swap contracts	—	—	5,515
Total derivatives not designated as hedging instruments	\$ 9,377	\$ 6,074	\$ 8,697
Total derivative instruments	\$ 9,644	\$ 16,851	\$ 8,697
	December 31, 2016		
	Prepaid Expenses and Other Current Assets	Other Current Liabilities	Other Liabilities
Derivatives designated as hedging instruments:			
Foreign exchange forward contracts	\$ 2,072	\$ 387	\$ 444
Total derivatives designated as hedging instruments	\$ 2,072	\$ 387	\$ 444
Derivatives not designated as hedging instruments:			
Foreign exchange forward contracts	\$ 4,006	\$ 6,255	\$ —
Total derivatives not designated as hedging instruments	\$ 4,006	\$ 6,255	\$ —
Total derivative instruments	\$ 6,078	\$ 6,642	\$ 444

The following tables present the effective amounts related to derivative instruments designated as cash flow hedges affecting accumulated other comprehensive income or loss and our condensed consolidated statements of operations for the nine months ended September 30, 2017 and 2016 (in thousands):

	Foreign Exchange Forward Contracts	Interest Rate Swap Contract	Cross Currency Swap Contract	Total
Balance in accumulated other comprehensive income (loss) at December 31, 2016	\$ 2,556	\$ —	\$ —	\$ 2,556
Amounts recognized in other comprehensive income (loss)	(3,993)	—	—	(3,993)
Amounts reclassified to earnings impacting:				
Other income, net	189	—	—	189
Balance in accumulated other comprehensive income (loss) at September 30, 2017	\$ (1,248)	\$ —	\$ —	\$ (1,248)
Balance in accumulated other comprehensive income (loss) at December 31, 2015	\$ 162	\$ (16)	\$ (2,017)	\$ (1,871)
Amounts recognized in other comprehensive income (loss)	37	(2)	5,108	5,143
Amounts reclassified to earnings impacting:				
Foreign currency loss, net	—	—	(4,896)	(4,896)
Interest expense, net	—	18	1,805	1,823
Balance in accumulated other comprehensive income (loss) at September 30, 2016	\$ 199	\$ —	\$ —	\$ 199

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We recorded no amounts related to ineffective portions of our derivative instruments designated as cash flow hedges during the three and nine months ended September 30, 2017 and 2016. We recognized unrealized gains of \$0.7 million and \$0.5 million related to amounts excluded from effectiveness testing for our foreign exchange forward contracts designated as cash flow hedges within “Other income, net” during the three and nine months ended September 30, 2017, respectively. We recognized unrealized losses of \$0.2 million and \$0.6 million related to amounts excluded from effectiveness testing for our foreign exchange forward contracts designated as cash flow hedges within “Other income, net” during the three and nine months ended September 30, 2016, respectively. The following table presents amounts related to derivative instruments not designated as hedges affecting our condensed consolidated statements of operations for the three and nine months ended September 30, 2017 and 2016 (in thousands):

		Amount of Gain (Loss) Recognized in Income			
		Three Months Ended September 30,		Nine Months Ended September 30,	
	Income Statement Line Item	2017	2016	2017	2016
Foreign exchange forward contracts	Foreign currency loss, net	\$ 6,934	\$ (6,763)	\$ (16,724)	\$ (29,740)
Interest rate swap contracts	Interest expense, net	167	—	(5,515)	—

Interest Rate Risk

We use interest rate swap and cross-currency 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.

In March 2017, Manildra Finco Pty Ltd, our indirect wholly-owned subsidiary and project financing company, entered into various interest rate swap contracts to hedge a portion of the floating rate construction loan facility under the associated project’s Manildra Credit Facility (as defined in Note 12. “Debt” to our condensed consolidated financial statements). Such swaps had an initial aggregate notional value of AUD 12.8 million and entitled the project to receive a one-month or three-month floating Bank Bill Swap or “BBSW” interest rate while requiring the project to pay a fixed rate of 3.13%. The aggregate notional amount of the interest rate swap contracts proportionately adjusts with the scheduled draws and principal payments on the underlying hedged debt. As of September 30, 2017, the aggregate notional value of the interest rate swap contracts was AUD 40.6 million (\$31.7 million). These derivative instruments do not qualify for accounting as cash flow hedges in accordance with ASC 815 due to our expectation to sell the associated project before the maturity of its project specific debt financing and corresponding swap contracts. Accordingly, the changes in the fair value of the swap contracts are recorded directly to “Interest expense, net.”

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 12. “Debt” to our condensed consolidated financial statements). Such swap had an initial notional value of ¥5.7 billion and entitled the project to receive a six-month floating Tokyo Interbank Offered Rate (“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 proportionately adjusts with the scheduled draws and principal payments on the underlying hedged debt. As of September 30, 2017, the notional value of the interest rate swap contract was ¥8.0 billion (\$71.2 million). This derivative instrument does not qualify for accounting as a cash flow hedge in accordance with ASC 815 due to our expectation to sell the associated project before the maturity of its project specific debt financing and corresponding swap contract. Accordingly, the changes in the fair value of the swap contract are recorded directly to “Interest expense, net.”

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 September 30, 2017 and December 31, 2016, these foreign exchange forward contracts hedged our forecasted cash flows for periods up to 12 months and 21 months, respectively. These foreign exchange forward contracts qualify for accounting as cash flow hedges in accordance with ASC 815, and we designated them as such. We initially report the effective portion of a derivative’s unrealized gain or loss in “Accumulated other comprehensive loss” and subsequently reclassify amounts into earnings when the hedged transaction occurs and impacts earnings. We determined that these derivative financial instruments were highly effective as cash flow hedges as of September 30, 2017 and December 31, 2016.

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As of September 30, 2017 and December 31, 2016, 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):

Currency	September 30, 2017	
	Notional Amount	USD Equivalent
Indian rupee	INR 4,730.0	\$72.5
Euro	€31.7	\$37.4

Currency	December 31, 2016	
	Notional Amount	USD Equivalent
Indian rupee	INR 860.0	\$12.7
Australian dollar	AUD 55.3	\$40.0

In the following 12 months, we expect to reclassify to earnings \$1.2 million of net unrealized losses related to these forward contracts that are included in “Accumulated other comprehensive loss” at September 30, 2017 as we realize the earnings effect of the related forecasted transactions. The amount we ultimately record to earnings will depend on the actual exchange rates when we realize the related forecasted transactions.

Transaction Exposure and Economic Hedging

Many of our subsidiaries have assets and liabilities (primarily cash, receivables, marketable securities, payables, debt, and solar module collection and recycling liabilities) that are denominated in currencies other than the subsidiaries’ functional currencies. Changes in the exchange rates between the functional currencies of our subsidiaries and the other currencies in which these assets and liabilities are denominated will create fluctuations in our reported condensed 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 loss, net” on our condensed consolidated statements of operations. These contracts mature at various dates within the next 1.3 years. As of September 30, 2017 and December 31, 2016, 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):

Transaction	Currency	September 30, 2017	
		Notional Amount	USD Equivalent
Purchase	Euro	€138.4	\$163.3
Sell	Euro	€132.2	\$156.0
Purchase	Australian dollar	AUD 66.6	\$52.1
Sell	Australian dollar	AUD 54.1	\$42.3
Purchase	Malaysian ringgit	MYR 14.0	\$3.3
Sell	Malaysian ringgit	MYR 548.1	\$129.8
Sell	Canadian dollar	CAD 3.9	\$3.1
Sell	Chilean peso	CLP 9,798.3	\$15.4
Purchase	Chinese yuan	CNY 13.8	\$2.1
Sell	Japanese yen	¥22,747.3	\$201.9
Sell	Indian rupee	INR 9,981.2	\$152.9
Sell	Singapore dollar	SGD 3.1	\$2.3
Purchase	South African rand	ZAR 11.9	\$0.9
Sell	South African rand	ZAR 58.0	\$4.3

Transaction	December 31, 2016		
	Currency	Notional Amount	USD Equivalent
Purchase	Euro	€64.5	\$68.0
Sell	Euro	€103.6	\$109.3
Purchase	Australian dollar	AUD 1.2	\$0.9
Sell	Australian dollar	AUD 19.3	\$14.0
Sell	Malaysian ringgit	MYR 24.5	\$5.5
Sell	Canadian dollar	CAD 17.7	\$13.2
Sell	Chilean peso	CLP 13,611.6	\$20.3
Purchase	Chinese yuan	CNY 24.3	\$3.5
Purchase	Japanese yen	¥97.3	\$0.8
Sell	Japanese yen	¥15,610.4	\$133.7
Sell	British pound	£0.6	\$0.7
Sell	Indian rupee	INR 12,753.2	\$187.7
Sell	South African rand	ZAR 51.2	\$3.7

10. 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 September 30, 2017, our cash equivalents consisted of money market funds. We value our money market cash equivalents using observable inputs that reflect quoted prices for securities with identical characteristics, and accordingly, we classify the valuation techniques that use these inputs as Level 1.
- *Marketable Securities and Restricted Investments.* At September 30, 2017 and December 31, 2016, our marketable securities consisted of foreign debt, foreign government obligations, and time deposits, and our restricted investments consisted of foreign and U.S. government obligations. At September 30, 2017, our marketable securities also consisted of U.S. debt. 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 September 30, 2017 and December 31, 2016, our derivative assets and liabilities consisted of foreign exchange forward contracts involving major currencies. At September 30, 2017, our derivative assets and liabilities also consisted of various 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.

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At September 30, 2017 and December 31, 2016, the fair value measurements of our assets and liabilities that we measure on a recurring basis were as follows (in thousands):

	September 30, 2017			
	Fair Value Measurements at Reporting Date Using			
	Total Fair Value and Carrying Value on Balance Sheet	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets:				
Cash equivalents:				
Money market funds	\$ 50,255	\$ 50,255	\$ —	\$ —
Marketable securities:				
Foreign debt	172,249	—	172,249	—
Foreign government obligations	198,307	—	198,307	—
U.S. debt	73,988	—	73,988	—
Time deposits	255,000	255,000	—	—
Restricted investments	365,022	—	365,022	—
Derivative assets	9,644	—	9,644	—
Total assets	<u>\$ 1,124,465</u>	<u>\$ 305,255</u>	<u>\$ 819,210</u>	<u>\$ —</u>
Liabilities:				
Derivative liabilities	<u>\$ 25,548</u>	<u>\$ —</u>	<u>\$ 25,548</u>	<u>\$ —</u>
December 31, 2016				
Fair Value Measurements at Reporting Date Using				
	Total Fair Value and Carrying Value on Balance Sheet	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets:				
Marketable securities:				
Foreign debt	\$ 296,819	\$ —	\$ 296,819	\$ —
Foreign government obligations	271,172	—	271,172	—
Time deposits	40,000	40,000	—	—
Restricted investments	339,926	—	339,926	—
Derivative assets	6,078	—	6,078	—
Total assets	<u>\$ 953,995</u>	<u>\$ 40,000</u>	<u>\$ 913,995</u>	<u>\$ —</u>
Liabilities:				
Derivative liabilities	<u>\$ 7,086</u>	<u>\$ —</u>	<u>\$ 7,086</u>	<u>\$ —</u>

Fair Value of Financial Instruments

The carrying values and fair values of our financial and derivative instruments at September 30, 2017 and December 31, 2016 were as follows (in thousands):

	September 30, 2017		December 31, 2016	
	Carrying Value	Fair Value	Carrying Value	Fair Value
Assets:				
Marketable securities	\$ 699,544	\$ 699,544	\$ 607,991	\$ 607,991
Foreign exchange forward contract assets	9,644	9,644	6,078	6,078
Restricted investments	365,022	365,022	339,926	339,926
Note receivable – noncurrent	8,258	8,311	7,385	7,493
Note receivable, affiliate – current	—	—	15,000	16,946
Notes receivable, affiliates – noncurrent	69,432	71,116	54,737	53,586
Liabilities:				
Long-term debt, including current maturities (1)	\$ 356,735	\$ 365,955	\$ 196,691	\$ 195,160
Interest rate swap contract liabilities	5,515	5,515	—	—
Foreign exchange forward contract liabilities	20,033	20,033	7,086	7,086

(1) Excludes capital lease obligations and unamortized discounts and issuance costs.

The carrying values in our condensed consolidated balance sheets of our cash and cash equivalents, trade accounts receivable, unbilled accounts receivable and retainage, restricted cash, accounts payable, income taxes payable, and accrued expenses approximated their fair values due to their nature and relatively short maturities; therefore, we excluded them from the foregoing table. We estimated the fair value of our notes receivable and long-term debt using a discounted cash flow approach (an income approach) based on observable market inputs. We incorporated the credit risk of our counterparty for all asset fair value measurements and our own credit risk for all liability fair value measurements. Such fair value measurements are considered Level 2 under the fair value hierarchy.

Credit Risk

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

11. Investments in Unconsolidated Affiliates and Joint Ventures

We have joint ventures or other strategic arrangements with partners in several markets, which are generally used to expedite our penetration of those markets and establish relationships with potential customers. We also enter into joint ventures or strategic arrangements with customers or other entities to maximize the value of particular projects. Some of these arrangements involve and are expected in the future to involve significant investments or other allocations of capital. Investments in unconsolidated entities for which we have significant influence, but not control, over the entities' operating and financial activities are accounted for under the equity method of accounting. Investments in unconsolidated entities for which we do not have the ability to exert such significant influence are accounted for under the cost method of accounting. The following table summarizes our equity and cost method investments as of September 30, 2017 and December 31, 2016 (in thousands):

	September 30, 2017	December 31, 2016
Equity method investments	\$ 225,388	\$ 232,337
Cost method investments	2,273	2,273
Investments in unconsolidated affiliates and joint ventures	<u>\$ 227,661</u>	<u>\$ 234,610</u>

8point3 Energy Partners LP

In June 2015, 8point3 Energy Partners LP (the "Partnership"), a limited partnership formed by First Solar and SunPower Corporation (the "Sponsors"), completed its initial public offering (the "IPO") pursuant to a Registration Statement on Form S-1, as amended. As part of the IPO, the Sponsors contributed interests in various projects to 8point3 Operating Company, LLC ("OpCo") in exchange for voting and economic interests in the entity, and the Partnership acquired an economic interest in OpCo using proceeds from the IPO. Since the formation of the Partnership, the Sponsors have, from time to time, continued to sell interests in solar projects to the Partnership, which owns and operates such portfolio of solar energy generation projects. In April 2017, we announced that we were reviewing alternatives for the sale of our interests in the Partnership.

As of September 30, 2017, we owned an aggregate of 22,116,925 Class B shares representing a 28% voting interest in the Partnership, and an aggregate of 6,721,810 common units and 15,395,115 subordinated units in OpCo together representing a 28% limited liability company interest in the entity. Future quarterly distributions from OpCo are subject to a subordination period in which holders of the subordinated units are not entitled to receive any distributions until the common units have received their minimum quarterly distribution plus any arrearages in the payment of minimum distributions from prior quarters. The subordination period will end after OpCo has earned and paid minimum quarterly distributions for three years ending on or after August 31, 2018 and there are no outstanding arrearages on common units. Notwithstanding the foregoing, the subordination period could end early if OpCo has earned and paid 150% of minimum quarterly distributions, plus the related distributions to incentive distribution right holders, for one year and there are no outstanding arrearages on common units. At the end of the subordination period, all subordinated units will convert to common units on a one-for-one basis. During the nine months ended September 30, 2017, we received distributions from OpCo of \$17.0 million. We also hold certain incentive distribution rights in OpCo, which represent a right to incremental distributions after certain distribution thresholds are met.

The Partnership is managed and controlled by its general partner, 8point3 General Partner, LLC ("General Partner"), and we account for our interest in OpCo, a subsidiary of the Partnership, under the equity method of accounting as we are able to exercise significant influence over the Partnership due to our representation on the board of directors of its General Partner and certain of our associates serving as officers of its General Partner. Under the equity method of accounting, we recognize equity in earnings for our proportionate share of OpCo's net income or loss, including adjustments for the amortization of a \$40.9 million remaining basis difference, which resulted from the cost of our investment differing from our proportionate share of OpCo's equity. During the three and nine months ended September 30, 2017, we recognized equity in earnings, net of tax, of \$6.3 million and \$10.1 million, respectively, from our investment in OpCo. During the three and nine months ended September 30, 2016, we recognized equity in earnings, net of tax, of \$8.6 million and \$26.0 million, respectively, from our investment in OpCo. As of September 30, 2017 and December 31, 2016, the carrying value of our investment in OpCo was \$206.0 million and \$206.8 million, respectively.

In connection with the IPO, we also entered into an agreement with a subsidiary of the Partnership to lease back one of our originally contributed projects, Maryland Solar, until December 31, 2019. Under the terms of the agreement, we make fixed rent payments to the Partnership's subsidiary and are entitled to all of the energy generated by the project. Due to our continuing involvement with the project, we account for the leaseback agreement as a financing transaction. As of September 30, 2017 and December 31, 2016, our financing obligation associated with the leaseback was \$35.6 million and \$38.5 million, respectively.

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In December 2016, we completed the sale of our remaining 34% interest in the 300 MW Desert Stateline project located in San Bernardino County, California to OpCo for aggregate consideration of \$329.5 million, including a \$50.0 million promissory note. The promissory note is unsecured and matures in December 2020. The promissory note bears interest at 4% per annum, which rate may increase to 6% per annum (i) upon the occurrence and during the continuation of a specified event of default and (ii) in respect of amounts accrued as payments-in-kind pursuant to the terms of such promissory note. Subject to certain conditions, OpCo may prepay the promissory note. Until OpCo has paid in full the principal and interest on the promissory note, OpCo is restricted in its ability to: (i) acquire interests in additional projects (other than the acquisition of the balance of the assets associated with a project located in Kern County, California); (ii) use the net proceeds of equity issuances except as prescribed in the promissory note; (iii) incur additional indebtedness to which the promissory note would be subordinate; and (iv) extend the maturity date under OpCo's existing credit facility. As of September 30, 2017 and December 31, 2016, the balance outstanding on the promissory note was \$49.6 million and \$50.0 million, respectively.

We provide O&M services to certain of the Partnership's partially owned project entities, including SG2 Holdings, LLC; Lost Hills Blackwell Holdings, LLC; NS Solar Holdings, LLC; Kingbird Solar A, LLC; Kingbird Solar B, LLC; and Desert Stateline LLC. During the three and nine months ended September 30, 2017, we recognized revenue of \$2.9 million and \$8.3 million, respectively, for such O&M services. During the three and nine months ended September 30, 2016, we recognized revenue of \$1.3 million and \$4.0 million, respectively, for such O&M services.

In June 2015, OpCo entered into a \$525.0 million senior secured credit facility, consisting of a \$300.0 million term loan facility, a \$25.0 million delayed draw term loan facility, and a \$200.0 million revolving credit facility (the "OpCo Credit Facility"). In September 2016, OpCo amended its senior secured credit facility to include an incremental \$250.0 million term loan facility, which increased the maximum borrowing capacity under the OpCo Credit Facility to \$775.0 million. The OpCo Credit Facility is secured, in part, by a pledge of the Sponsors' equity interests in OpCo.

Clean Energy Collective, LLC

In November 2014, we entered into various agreements to purchase a minority ownership interest in Clean Energy Collective, LLC ("CEC"). This investment provided us with additional access to the distributed generation market and a partner to develop and market community solar offerings to North American residential customers and businesses directly on behalf of client utility companies. As part of the investment, we also received a warrant, valued at \$1.8 million, to purchase additional ownership interests in CEC.

In addition to our equity investment, we also entered into a term loan agreement and a convertible loan agreement with CEC in November 2014 and February 2016, respectively. In August 2017, we amended the terms of the warrant and loan agreements to (i) fix the exercise price of the warrant at our initial investment price per unit, (ii) extend the maturity of the loans to November 2018, (iii) allow for the capitalization of certain accrued and future interest on the term loan, (iv) require mandatory prepayments on the term loan under certain conditions, and (v) fix the interest rate of the term loan at 16% per annum, payable semiannually. The interest rate of the convertible loan remained at 10% per annum, payable at maturity unless converted earlier pursuant to a qualified equity financing by CEC. As of September 30, 2017 and December 31, 2016, the balance outstanding on the term loan was \$15.2 million and \$15.0 million, respectively, and the balance outstanding on the convertible loan was \$4.6 million.

CEC is considered a variable interest entity, or VIE, and our 26% ownership interest in and loans to the company are considered variable interests. We account for our investment in CEC under the equity method of accounting as we are not the primary beneficiary of the company given that we do not have the power to make decisions over the activities that most significantly impact the company's economic performance. Under the equity method of accounting, we recognize equity in earnings for our proportionate share of CEC's net income or loss including adjustments for the amortization of a basis difference resulting from the cost of our investment differing from our proportionate share of CEC's equity. During the three and nine months ended September 30, 2017, we recognized losses, net of tax, of \$0.5 million and \$2.7 million, respectively, from our investment in CEC. During the three and nine months ended September 30, 2016, we recognized losses, net of tax, of \$0.6 million and \$2.9 million, respectively, from our investment in CEC. As of September 30, 2017 and December 31, 2016, the carrying value of our investment was \$6.4 million and \$10.5 million, respectively.

12. Debt

Our long-term debt consisted of the following at September 30, 2017 and December 31, 2016 (in thousands):

Loan Agreement	Loan Denomination	Balance (USD)	
		September 30, 2017	December 31, 2016
Revolving Credit Facility	USD	\$ —	\$ —
Luz del Norte Credit Facilities	USD	184,060	180,939
Ishikawa Credit Agreement	JPY	99,527	—
Japan Credit Facility	JPY	10,695	9,477
Marikal and Mahabubnagar Credit Facilities	INR	3,628	4,067
Polepally Credit Facility	INR	1,587	2,208
Hindupur Credit Facility	INR	18,551	—
Manildra Credit Facility	AUD	38,687	—
Capital lease obligations	Various	215	562
Long-term debt principal		356,950	197,253
Less: unamortized discounts and issuance costs		(13,290)	(8,865)
Total long-term debt		343,660	188,388
Less: current portion		(13,451)	(27,966)
Noncurrent portion		\$ 330,209	\$ 160,422

Revolving Credit Facility

In July 2017, we amended and restated our senior secured credit facility (the “Revolving Credit Facility”) with several financial institutions as lenders and JPMorgan Chase Bank, N.A. as administrative agent. Such amendment and restatement extended the maturity of the prior facility to July 2022 and reduced the aggregate borrowing capacity under the facility to \$500.0 million, which we may increase to \$750.0 million, subject to certain conditions. Borrowings under the amended and restated facility bear interest at (i) 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 September 30, 2017 and December 31, 2016 and had issued \$131.4 million and \$125.0 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%.

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 with the Overseas Private Investment Corporation (“OPIC”) 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 PV solar power plant located near Copiapó, Chile. At the same time, Luz del Norte also entered into a Chilean peso facility (“VAT facility”) and together with the OPIC and IFC loans, the “Luz del Norte Credit Facilities”) with Banco de Crédito e Inversiones to fund Chilean value added tax associated with the construction of the Luz del Norte project. In March 2017, we repaid the remaining balance on the VAT facility. As of December 31, 2016, the balance outstanding on the VAT facility was \$13.7 million.

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In March 2017, we amended the terms of the OPIC 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 OPIC and IFC loans until June 2037, and (iv) canceled the remaining borrowing capacity under the OPIC and IFC credit facilities with the exception of the capitalization of certain future interest payments. As of September 30, 2017 and December 31, 2016, the balance outstanding on the OPIC loans was \$137.8 million and \$125.1 million, respectively. As of September 30, 2017 and December 31, 2016, the balance outstanding on the IFC loans was \$46.2 million and \$42.2 million, respectively. The OPIC and IFC loans are secured by liens over all of Luz del Norte's assets, which had an aggregate book value of \$332.9 million, including intercompany charges, as of September 30, 2017 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 of up to ¥27.3 billion (\$242.3 million) for the development and construction of a 59 MW PV solar power plant located in Ishikawa, Japan. The credit agreement consists of a ¥24.0 billion (\$213.0 million) senior loan facility, a ¥2.1 billion (\$18.6 million) consumption tax facility, and a ¥1.2 billion (\$10.7 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 September 30, 2017, the balance outstanding on the credit agreement was \$99.5 million.

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 (\$35.5 million) for the development and construction of utility-scale PV solar power plants in Japan (the "Japan Credit Facility"). In September 2017, First Solar Japan GK renewed the facility for an additional one-year period until September 2018. 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 September 30, 2017 and December 31, 2016, the balance outstanding on the facility was \$10.7 million and \$9.5 million, 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 (\$62.1 million) for the development of utility-scale PV solar power plants in Japan (the "Tochigi Credit Facility"). The majority of the facility is available to be drawn by or before November 2018, and the aggregate 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 September 30, 2017, there was no balance outstanding on the term loan facility.

Marikal and Mahabubnagar Credit Facilities

In March 2015, Marikal Solar Parks Private Limited and Mahabubnagar Solar Parks Private Limited, our indirect wholly-owned subsidiaries and project companies, entered into term loan facilities (the "Marikal and Mahabubnagar Credit Facilities") with Axis Bank as administrative agent for combined aggregate borrowings up to INR 1.1 billion (\$16.9 million) for the development and construction of two 10 MW PV solar power plants located in Telangana, India. The term loan facilities have a combined letter of credit sub-limit of INR 0.8 billion (\$12.3 million), which may also be used to support construction activities. As of September 30, 2017 and December 31, 2016, we had issued INR 0.8 billion (\$12.3 million) and INR 0.8 billion (\$11.2 million), respectively, of letters of credit under the term loan facilities. The term loan facilities mature in December 2028 and are secured by certain assets of the borrowers, which had an aggregate book value of \$99.5 million, including intercompany charges, as of September 30, 2017 and by a pledge of a portion of the equity interests in the borrowers. In addition, the Marikal term loan facility is guaranteed by First Solar, Inc. until certain conditions are met, including the repayment of an intercompany loan to the project company. As of September 30, 2017 and December 31, 2016, the balance outstanding on the term loan facilities was \$3.6 million and \$4.1 million, respectively.

Polepally Credit Facility

In March 2016, Polepally Solar Parks Private Limited, our indirect wholly-owned subsidiary and project company, entered into a term loan facility (the “Polepally Credit Facility”) with Axis Bank as administrative agent for borrowings up to INR 1.3 billion (\$19.9 million) for costs related to a 25 MW PV solar power plant located in Telangana, India. The term loan facility has a letter of credit sub-limit of INR 1.1 billion (\$16.9 million), which may also be used for project related costs. As of September 30, 2017 and December 31, 2016, we had issued INR 1.0 billion (\$15.3 million) and INR 1.0 billion (\$15.3 million), respectively, of letters of credit under the term loan facility. The term loan facility matures in September 2029 and is secured by certain assets of the borrower, which had an aggregate book value of \$32.8 million, including intercompany charges, as of September 30, 2017 and by a pledge of a portion of the equity interests in the borrower. In addition, the term loan facility is guaranteed by First Solar, Inc. until certain conditions are met, including the achievement of commercial operations by the plant and various other compliance and performance metrics. As of September 30, 2017 and December 31, 2016, the balance outstanding on the term loan facility was \$1.6 million and \$2.2 million, respectively.

Hindupur Credit Facility

In November 2016, Hindupur Solar Parks Private Limited, our indirect wholly-owned subsidiary and project company, entered into a term loan facility (the “Hindupur Credit Facility”) with Yes Bank Limited for borrowings up to INR 4.3 billion (\$65.9 million) for costs related to an 80 MW portfolio of PV solar power plants located in Andhra Pradesh, India. The term loan facility has a letter of credit sub-limit of INR 3.2 billion (\$49.0 million), which may also be used for project related costs. As of September 30, 2017, we had issued INR 2.9 billion (\$44.4 million) of letters of credit under the term loan facility. The term loan facility matures in December 2030 and is secured by certain assets of the borrower, which had an aggregate book value of \$99.7 million, including intercompany charges, as of September 30, 2017 and by a pledge of a portion of the equity interests in the borrower. In addition, the term loan facility is guaranteed by First Solar, Inc. until certain conditions are met, including the achievement of commercial operations by the plants and various other compliance and performance metrics. As of September 30, 2017, the balance outstanding on the term loan facility was \$18.6 million.

Manildra Credit Facility

In March 2017, Manildra Finco Pty Ltd, our indirect wholly-owned subsidiary and project financing company, entered into a term loan agreement (the “Manildra Credit Facility”) with Société Générale S.A. and The Bank of Tokyo-Mitsubishi UFJ, Ltd. for borrowings up to AUD 81.7 million (\$63.9 million) for costs related to a 49 MW PV solar power plant located in New South Wales, Australia. The credit facility consists of an AUD 75.7 million (\$59.2 million) construction loan facility and an additional AUD 6.0 million (\$4.7 million) goods and service tax facility (“GST facility”) to fund certain taxes associated with the construction of the associated project. Upon completion of the project’s construction, the construction loan facility will convert to a term loan facility, which matures in March 2022. The GST facility matures in March 2019. The credit facility is secured by pledges of the borrower’s assets, accounts, material project documents, and by the equity interests in the entity. As of September 30, 2017, the balance outstanding on the term loan facility was \$38.7 million.

Variable Interest Rate Risk

Certain of our long-term debt agreements bear interest at prime, LIBOR, TIBOR, Bank Bill Swap Bid Rate (“BBSY”), or equivalent variable rates. A disruption of the credit environment, as previously experienced, could negatively impact interbank lending and, therefore, negatively impact these floating rates. An increase in prime, LIBOR, TIBOR, BBSY, or equivalent variable rates would increase the cost of borrowing under our Revolving Credit Facility and certain project specific debt financings.

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Our long-term debt borrowing rates as of September 30, 2017 were as follows:

Loan Agreement	September 30, 2017
Revolving Credit Facility	3.22%
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 0.5%
Tochigi Credit Facility	3-month TIBOR plus 1.0%
Marikal and Mahabubnagar Credit Facilities	Bank rate plus 2.35%
Polepally Credit Facility	Bank rate plus 2.35%
Hindupur Credit Facility	Bank rate plus 1.0%
Manildra Credit Facility	Construction loan facility at 1-month BBSY plus 1.70% (2) GST facility at 1-month BBSY plus 1.60%
Capital lease obligations	Various

(1) Outstanding balance comprised of \$166.0 million of fixed rate loans and \$18.0 million of variable rate loans as of September 30, 2017.

(2) We have entered into interest rate swap contracts to hedge portions of these variable rates. See Note 9. "Derivative Financial Instruments" to our condensed consolidated financial statements for additional information.

Future Principal Payments

At September 30, 2017, the future principal payments on our long-term debt, excluding payments related to capital leases, were due as follows (in thousands):

	Total Debt
Remainder of 2017	\$ 11,327
2018	2,622
2019	10,349
2020	17,216
2021	9,284
Thereafter	305,937
Total long-term debt future principal payments	\$ 356,735

13. 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 provided 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 September 30, 2017, we had \$131.4 million in letters of credit issued under our Revolving Credit Facility, leaving \$268.6 million of availability for the issuance of additional letters of credit. The majority of these letters of credit supported our systems business projects. As of September 30, 2017, we also had \$1.8 million of bank guarantees and letters of credit under separate agreements that were posted by certain of our foreign subsidiaries, \$185.5 million of letters of credit issued under two bilateral facilities, of which \$5.1 million was secured with cash, and \$258.1 million of surety bonds outstanding primarily for our systems business projects. The available bonding capacity under our surety lines was \$460.2 million as of September 30, 2017.

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In addition to the commercial commitments noted above, we also have certain commercial letters of credit, also known as letters of undertaking, which have been issued under our Marikal and Mahabubnagar Credit Facilities, Polepally Credit Facility, and Hindupur Credit Facility as discussed in Note 12. “Debt” to our condensed consolidated financial statements. Such commercial letters of credit represent conditional commitments on the part of the issuing financial institution to provide payment to third-party beneficiaries on amounts drawn in accordance with the terms of the individual documents. As part of the financing of the associated systems business projects, we presented these commercial letters of credit to other financial institutions, whereby we received immediate funding and the other financial institutions agreed to draw upon such letters at a future date. At the time of draw, the balance of the commercial letters of credit will be included in the balance outstanding of the respective credit facility. In the periods between the receipt of cash and the subsequent draw on the commercial letters of credit, we accrue interest on the balance or otherwise accrete any discounted value of the letters to their face value and record such amounts as “Interest expense, net” on our condensed consolidated statement of operations. As of September 30, 2017 and December 31, 2016, we accrued \$70.0 million and \$26.6 million, respectively, for contingent obligations associated with such commercial letters of credit. These amounts were classified as “Other liabilities” on our condensed consolidated balance sheets to align with the timing in which we expect to settle such obligations as payments under the associated credit facilities.

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 our solar modules under warranty installed at customer locations, our historical experience with warranty claims, our monitoring of field installation sites, our internal testing and the expected future performance of our solar modules and BoS components, and our estimated replacement costs. From time to time, we have taken remediation actions with respect to affected modules beyond our limited warranties and may elect to do so in the future, in which case we would incur additional expenses. Such potential voluntary future remediation actions beyond our limited warranty obligations could be material to our condensed consolidated statements of operations if we commit to any such remediation actions.

Product warranty activities during the three and nine months ended September 30, 2017 and 2016 were as follows (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2017	2016	2017	2016
Product warranty liability, beginning of period	\$ 239,701	\$ 250,371	\$ 252,408	\$ 231,751
Accruals for new warranties issued	8,048	6,158	18,334	26,854
Settlements	(2,867)	(2,814)	(6,783)	(9,246)
Changes in estimate of product warranty liability	(1,188)	1,169	(20,265)	5,525
Product warranty liability, end of period	\$ 243,694	\$ 254,884	\$ 243,694	\$ 254,884
Current portion of warranty liability	\$ 31,016	\$ 37,552	\$ 31,016	\$ 37,552
Noncurrent portion of warranty liability	\$ 212,678	\$ 217,332	\$ 212,678	\$ 217,332

We estimate our limited product warranty liability for power output and defects in materials and workmanship under normal use and service conditions based on warranty return rates of approximately 1% to 3% for modules covered under warranty, depending on the series of module technology. As of September 30, 2017, a 1% change in estimated warranty return rates would change our module warranty liability by \$74.5 million, and a 1% change in the estimated warranty return rate for BoS components would not have a material impact on the associated warranty liability.

Performance Guarantees

As part of our systems business, we conduct performance testing of a system prior to substantial completion to confirm the system meets its operational and capacity expectations noted in the EPC agreement. In addition, we may provide an energy performance test during the first or second year of a system’s operation to demonstrate that the actual energy generation for the applicable year meets or exceeds the modeled energy expectation, after certain adjustments. If there is an underperformance event with regards to these tests, we may incur liquidated damages as a percentage of the EPC contract price. In certain instances, a bonus payment may be received at the end of the applicable test period if the system performs above a specified level. As of September 30, 2017 and December 31, 2016, we accrued \$1.9 million and \$6.3 million, respectively, of estimated obligations under such arrangements, which were classified as “Other current liabilities” in our condensed consolidated balance sheets.

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As part of our O&M service offerings, we typically offer an effective availability guarantee, which stipulates that a system will be available to generate a certain percentage of total possible energy during a specific period after adjusting for factors outside of our control as the service provider, such as weather, curtailment, outages, force majeure, and other conditions that may affect system availability. Effective availability guarantees are only offered as part of our O&M services and terminate at the end of an O&M arrangement. If we fail to meet the contractual threshold for these guarantees, we may incur liquidated damages for certain lost energy under the PPA. Our O&M agreements typically contain provisions limiting our total potential losses under an agreement, including amounts paid for liquidated damages, to a percentage of O&M fees. Many of our O&M agreements also contain provisions whereby we may receive a bonus payment if system availability exceeds a separate threshold. As of September 30, 2017 and December 31, 2016, we did not accrue any estimated obligations under our effective availability guarantees.

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 Internal Revenue Service 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, *Guarantees*, 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 recognize such liabilities at the greater of the fair value of the indemnity or the contingent liability required to be recognized under ASC 450, *Contingencies*, and reduce the revenue recognized in the related transaction.

As applicable, we initially estimate the fair value of any such indemnities provided based 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. 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. Changes to any such indemnification liabilities provided are recorded as adjustments to revenue. In September 2017, we paid \$100.0 million to a purchaser of one of our projects pursuant to an indemnification provision following the underpayment of anticipated cash grants for the project. As of September 30, 2017 and December 31, 2016, we accrued \$2.8 million and \$100.0 million of current indemnification liabilities, respectively, and \$4.9 million and \$1.9 million of noncurrent indemnification liabilities, respectively, for tax related indemnifications. As of September 30, 2017, the maximum potential amount of future payments under our tax related indemnifications was \$181.8 million, and we held insurance policies allowing us to recover up to \$60.3 million of potential amounts paid under the indemnifications covered by the policies.

Contingent Consideration

As part of our Enki acquisition in October 2016, we agreed to pay additional consideration of up to \$7.0 million to the selling shareholders contingent upon the achievement of certain production and module performance milestones. See Note 5. "Business Acquisitions" to our condensed consolidated financial statements for further discussion of this acquisition. As of September 30, 2017, we recorded \$5.3 million of current liabilities for our contingent obligations associated with the Enki acquisition based on their estimated fair values and the expected timing of payment. As of December 31, 2016, we recorded \$7.0 million of long-term liabilities for such obligations.

We continually 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 September 30, 2017 and December 31, 2016, we recorded \$3.9 million and \$19.6 million of current liabilities, respectively, and \$3.1 million and \$3.5 million of long-term liabilities, respectively, for such contingent obligations. Any future differences between the acquisition-date contingent obligation estimate and the ultimate settlement of the 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.

Solar Module Collection and Recycling Liability

We voluntarily established a module collection and recycling program to collect and recycle modules sold and covered under such program once the modules reach the end of their useful lives. For customer sales contracts that include modules covered under this program, we agree to pay the costs for the collection and recycling of qualifying solar modules, and the end-users agree to notify us, disassemble their solar power systems, package the solar modules for shipment, and revert ownership rights over the modules back to us at the end of the modules' service lives. Accordingly, we record our collection and recycling obligations within "Cost of sales" at the time of sale based on the estimated cost to collect and recycle the covered solar modules. During the three and nine months ended September 30, 2017 and 2016, substantially all of our modules sold were not covered by our collection and recycling program.

We estimate the cost of our collection and recycling obligations based on the present value of the expected probability-weighted future cost of collecting and recycling the solar modules, which includes estimates for the cost of packaging materials; the cost of freight from the solar module installation sites to a recycling center; 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 conditions at the time the solar modules will be collected and recycled. In the periods between the time of sale and the related settlement of the collection and recycling obligation, we accrete the carrying amount of the associated liability by applying the discount rate used for its initial measurement. We classify accretion as an operating expense within "Selling, general and administrative" expense on our condensed consolidated statements of operations.

We periodically review our estimates of expected future recycling costs and may adjust our liability accordingly. During the three months ended September 30, 2017, we completed our annual cost study of obligations under our module collection and recycling program and reduced our associated liability by \$15.8 million as a result of updates to several valuation assumptions, including a decrease in certain inflation rates. Our module collection and recycling liability was \$163.7 million and \$166.3 million as of September 30, 2017 and December 31, 2016, respectively. As of September 30, 2017, a 1% increase in the annualized inflation rate used in our estimated future collection and recycling cost per module would increase our liability by \$32.9 million, and a 1% decrease in that rate would decrease our liability by \$27.6 million.

See Note 7. "Restricted Cash and Investments" to our condensed consolidated financial statements for more information about our arrangements for funding this liability.

Legal Proceedings

We are party to legal matters and claims in the normal course of our operations. While we believe that the ultimate outcome of these matters will not have a material adverse effect on our financial position, results of operations, or cash flows, the outcome of these matters is not determinable with certainty, and negative outcomes may adversely affect us.

Class Action

On March 15, 2012, a purported class action lawsuit titled *Smilovits v. First Solar, Inc., et al.*, Case No. 2:12-cv-00555-DGC, was filed in the United States District Court for the District of Arizona (hereafter "Arizona District Court") against the Company and certain of our current and former directors and officers. The complaint was filed on behalf of persons who purchased or otherwise acquired the Company's publicly traded securities between April 30, 2008 and February 28, 2012 (the "Class Action"). The complaint generally alleges that the defendants violated Sections 10(b) and 20(a) of the Securities Exchange Act of 1934 by making false and misleading statements regarding the Company's financial performance and prospects. The action includes claims for damages, including interest, and an award of reasonable costs and attorneys' fees to the putative class. The Company believes it has meritorious defenses and will vigorously defend this action.

On July 23, 2012, the Arizona District Court issued an order appointing as lead plaintiffs in the Class Action the Mineworkers' Pension Scheme and British Coal Staff Superannuation Scheme (collectively "Pension Schemes"). The Pension Schemes filed an amended complaint on August 17, 2012, which contains similar allegations and seeks similar relief as the original complaint. Defendants filed a motion to dismiss on September 14, 2012. On December 17, 2012, the court denied defendants' motion to dismiss. On October 8, 2013, the Arizona District Court granted the Pension Schemes' motion for class certification, and certified a class comprised of all persons who purchased or otherwise acquired publicly traded securities of the Company between April 30, 2008 and February 28, 2012 and were damaged thereby, excluding defendants and certain related parties. Merits discovery closed on February 27, 2015.

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Defendants filed a motion for summary judgment on March 27, 2015. On August 11, 2015, the Arizona District Court granted defendants' motion in part and denied it in part, and certified an issue for immediate appeal to the Ninth Circuit Court of Appeals (the "Ninth Circuit"). First Solar filed a petition for interlocutory appeal with the Ninth Circuit, and that petition was granted on November 18, 2015. On May 20, 2016, the Pension Schemes moved to vacate the order granting the petition, dismiss the appeal, and stay the merits briefing schedule. On December 13, 2016, the Ninth Circuit denied the Pension Schemes' motion. Merits briefing and oral argument on the appeal are now complete and the parties are awaiting an opinion from the Ninth Circuit. The Arizona District Court has entered a stay of the proceedings in district court until the appeal is decided. Given the pending appeal, the need for further expert discovery, and the uncertainties of trial, we are not in a position to assess whether any loss or adverse effect on our financial condition is probable or remote or to estimate the range of potential loss, if any.

Opt-Out Action

On June 23, 2015, a suit titled *Maverick Fund, L.D.C. v. First Solar, Inc., et al.*, Case No. 2:15-cv-01156-ROS, was filed in Arizona District Court by putative stockholders that opted out of the Class Action. The complaint names the Company and certain of our current and former directors and officers as defendants, and alleges that the defendants violated Sections 10(b) and 20(a) of the Securities Exchange Act of 1934, and violated state law, by making false and misleading statements regarding the Company's financial performance and prospects. The action includes claims for recessionary and actual damages, interest, punitive damages, and an award of reasonable attorneys' fees, expert fees, and costs. The Company believes it has meritorious defenses and will vigorously defend this action.

The Arizona District Court has extended the deadline for responding to the complaint until after the Ninth Circuit resolves the appeal in the Smilovits matter described above. Accordingly, we are not in a position to assess whether any loss or adverse effect on our financial condition is probable or remote or to estimate the range of potential loss, if any.

Derivative Actions

On April 3, 2012, a derivative action titled *Tsevegmid v. Ahearn, et al.*, Case No. 1:12-cv-00417-CJB, was filed by a putative stockholder on behalf of the Company in the United States District Court for the District of Delaware (hereafter "Delaware District Court") against certain current and former directors and officers of the Company, alleging breach of fiduciary duties and unjust enrichment. The complaint generally alleges that from June 1, 2008, to March 7, 2012, the defendants caused or allowed false and misleading statements to be made concerning the Company's financial performance and prospects. The action includes claims for, among other things, damages in favor of the Company, certain corporate actions to purportedly improve the Company's corporate governance, and an award of costs and expenses to the putative plaintiff stockholder, including attorneys' fees. On April 10, 2012, a second derivative complaint was filed in the Delaware District Court. The complaint, titled *Brownlee v. Ahearn, et al.*, Case No. 1:12-cv-00456-CJB, contains similar allegations and seeks similar relief to the *Tsevegmid* action. By court order on April 30, 2012, pursuant to the parties' stipulation, the *Tsevegmid* action and the *Brownlee* action were consolidated into a single action in the Delaware District Court. On May 15, 2012, defendants filed a motion to challenge Delaware as the appropriate venue for the consolidated action. On March 4, 2013, the magistrate judge issued a Report and Recommendation recommending to the court that defendants' motion be granted and that the case be transferred to the Arizona District Court. On July 12, 2013, the court adopted the magistrate judge's Report and Recommendation and ordered the case transferred to the Arizona District Court. The transfer was completed on July 15, 2013.

On April 12, 2012, a derivative complaint was filed in the Arizona District Court, titled *Tindall v. Ahearn, et al.*, Case No. 2:12-cv-00769-ROS. In addition to alleging claims and seeking relief similar to the claims and relief asserted in the *Tsevegmid* and *Brownlee* actions, the *Tindall* complaint alleges violations of Sections 14(a) and 20(b) of the Securities Exchange Act of 1934. On April 19, 2012, a second derivative complaint was filed in the Arizona District Court, titled *Nederhood v. Ahearn, et al.*, Case No. 2:12-cv-00819-JWS. The *Nederhood* complaint contains similar allegations and seeks similar relief to the *Tsevegmid* and *Brownlee* actions. On May 17, 2012 and May 30, 2012, respectively, two additional derivative complaints, containing similar allegations and seeking similar relief as the *Nederhood* complaint, were filed in Arizona District Court: *Morris v. Ahearn, et al.*, Case No. 2:12-cv-01031-JAT and *Tan v. Ahearn, et al.*, 2:12-cv-01144-NVW.

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On July 17, 2012, the Arizona District Court issued an order granting First Solar’s motion to transfer the derivative actions to Judge David Campbell, the judge to whom the Smilovits class action is assigned. On August 8, 2012, the court consolidated the four derivative actions pending in Arizona District Court, and on August 31, 2012, plaintiffs filed an amended complaint. Defendants filed a motion to stay the action on September 14, 2012. On December 17, 2012, the Arizona District Court granted defendants’ motion to stay pending resolution of the Smilovits class action. On August 13, 2013, Judge Campbell consolidated the two derivative actions transferred from the Delaware District Court with the stayed Arizona derivative actions. On February 19, 2016, the Arizona District Court issued an order lifting the stay in part. Pursuant to the February 19, 2016 order, the plaintiffs filed an amended complaint on March 11, 2016, and defendants filed a motion to dismiss the amended complaint on April 1, 2016. On June 30, 2016, the Arizona District Court granted defendants’ motion to dismiss the insider trading and unjust enrichment claims with prejudice, and further granted defendants’ motion to dismiss the claims for alleged breaches of fiduciary duties with leave to amend. On July 15, 2016, plaintiffs filed a motion to reconsider certain aspects of the order granting defendants’ motion to dismiss. The Arizona District Court denied the plaintiffs’ motion for reconsideration on August 4, 2016. On July 15, 2016, plaintiffs filed a motion to intervene, lift the stay, and unseal documents in the securities Class Action. On September 30, 2016, the Arizona District Court denied plaintiffs’ motion. On October 17, 2016, plaintiffs filed a notice of appeal to the Ninth Circuit of the September 30, 2016 order. On October 27, 2016, plaintiffs filed a motion to extend the October 31, 2016 deadline to file an amended complaint. On November 29, 2016, the Arizona District Court denied plaintiffs’ request and directed the clerk to terminate the action. On January 23, 2017, the Arizona District Court entered judgment in favor of defendants and terminated the action. On January 27, 2017, plaintiffs filed a notice of appeal to the Ninth Circuit. Merits briefing on plaintiffs’ appeals is ongoing.

On July 16, 2013, a derivative complaint was filed in the Superior Court of Arizona, Maricopa County, titled Bargar, et al. v. Ahearn, et al., Case No. CV2013-009938, by a putative stockholder against certain current and former directors and officers of the Company. The complaint contains similar allegations to the Delaware and Arizona derivative cases, and includes claims for, among other things, breach of fiduciary duties, insider trading, unjust enrichment, and waste of corporate assets. By court order on October 3, 2013, the Superior Court of Arizona, Maricopa County granted the parties’ stipulation to defer defendants’ response to the complaint pending resolution of the Smilovits class action or expiration of the stay issued in the consolidated derivative actions in the Arizona District Court. On November 5, 2013, the matter was placed on the court’s inactive calendar. The parties have jointly sought and obtained multiple requests to continue the stay in this action. Most recently, on July 6, 2017, the court entered an order continuing the stay until November 30, 2017.

The Company believes that plaintiffs in the derivative actions lack standing to pursue litigation on behalf of First Solar. The derivative actions are still in the initial stages and there has been no discovery. Accordingly, we are not in a position to assess whether any loss or adverse effect on our financial condition is probable or remote or to estimate the range of potential loss, if any.

14. Revenue from Contracts with Customers

The following table represents a disaggregation of revenue from contracts with customers for the three and nine months ended September 30, 2017 and 2016 along with the reportable segment for each category (in thousands):

Category	Segment	Three Months Ended September 30,		Nine Months Ended September 30,	
		2017	2016	2017	2016
Solar power systems	Both	\$ 747,579	\$ 183,784	\$ 1,840,097	\$ 1,127,904
EPC services	Both	272	201,114	40,706	853,324
Solar modules	Components	300,297	213,046	599,827	425,779
O&M services	Systems	25,414	24,775	75,074	69,812
Module plus	Both	3	50,366	3,314	81,716
Energy generation (1)	Systems	13,461	8,191	43,125	15,233
Net sales		\$ 1,087,026	\$ 681,276	\$ 2,602,143	\$ 2,573,768

(1) Substantially all energy generated and sold by our PV solar power systems is accounted for under ASC 840 consistent with the classification of the associated PPAs.

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In our reportable segment financial disclosures, we include an allocation of net sales value for all solar modules manufactured by our components segment and installed in projects sold or built by our systems segment in the net sales of our components segment. Accordingly, the solar module portion of net sales of solar power systems, EPC services, and module plus arrangements is included in the net sales of our components segment along with solar module sales to third parties. The remaining portion of the net sales of solar power systems, EPC services, and module plus arrangements is included in the net sales of our systems segment along with revenue from O&M services and energy generation.

We generally recognize revenue for sales of solar power systems and/or EPC services 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 towards contract completion and to calculate the corresponding amount of revenue to recognize. If estimated total costs on any contract are greater than the net contract revenues, we recognize the entire estimated loss in the period the loss becomes known. The cumulative effect of 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 condensed consolidated statements of operations. The table below 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 three and nine months ended September 30, 2017 and 2016 as well as the number of projects that comprise such changes. For purposes of the following 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. Also included in the table is the net change in estimate as a percentage of the aggregate revenue for such projects.

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2017	2016	2017	2016
Number of projects	2	10	4	11
Increase (decrease) in revenue from net changes in transaction prices (in thousands)	\$ 1,153	\$ 273	\$ (14)	\$ (46,969)
Increase in revenue from net changes in input cost estimates (in thousands)	2,874	46,215	4,994	169,398
Net increase in revenue from net changes in estimates (in thousands)	<u>\$ 4,027</u>	<u>\$ 46,488</u>	<u>\$ 4,980</u>	<u>\$ 122,429</u>
Net change in estimate as a percentage of aggregate revenue for associated projects	1.1%	1.2%	0.8%	2.0%

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 nine months ended September 30, 2017 (in thousands):

	September 30, 2017	December 31, 2016	Nine Months Change	
Accounts receivable, unbilled	\$ 451,526	\$ 200,474		
Retainage	3,592	6,265		
Accounts receivable, unbilled and retainage	<u>\$ 455,118</u>	<u>\$ 206,739</u>	\$ 248,379	120 %
Deferred revenue (1)	<u>\$ 132,738</u>	<u>\$ 308,704</u>	\$ (175,966)	(57)%

(1) Includes \$63.6 million of long-term deferred revenue classified as “Other liabilities” on our condensed consolidated balance sheet as of September 30, 2017.

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. Billing requirements vary by contract but are generally structured around the completion of certain construction milestones. Some of our EPC contracts for systems we build may also 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.

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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.

During the nine months ended September 30, 2017, our contract assets increased by \$248.4 million primarily due to unbilled receivables associated with the sale of the California Flats project in August 2017 and the sale of the Switch Station projects in June 2017, partially offset by final billings on the East Pecos project following the completion of substantially all construction activities. During the nine months ended September 30, 2017, our contract liabilities decreased by \$176.0 million primarily as a result of the completion of the sale of the Moapa project, on which we had received a significant portion of the proceeds in 2016, and revenue recognized from construction on the Helios project following the partial billing of such services in 2016, partially offset by advance payments received on sales of solar modules.

During the nine months ended September 30, 2017 and 2016, we recognized revenue of \$308.6 million and \$98.3 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 September 30, 2017 for sales of solar power systems, including uncompleted sold projects, projects under sales contracts subject to conditions precedent, and EPC agreements for partner developed projects that we are constructing or expect to construct. 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 \$0.3 billion 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	EPC Contract/Partner Developed Project	Expected Year Revenue Recognition Will Be Completed	Percentage of Revenue Recognized
California Flats, California	280	Solar power systems	Capital Dynamics	2018	68%
Cuyama, California	40	Solar power systems	D.E. Shaw Renewable Investments	2017	78%
Total	320				

As of September 30, 2017, we had entered into contracts with customers for the future sale of 5.6 GW_{dc} of solar modules for an aggregate transaction price of \$2.0 billion. We expect to recognize such amounts as revenue through 2020 as we transfer control of the modules to customers, which typically occurs upon shipment or delivery depending on the terms of the underlying contracts. As of September 30, 2017, we had also entered into long-term O&M contracts covering approximately 7 GW_{dc} of utility-scale PV solar power systems. We expect to recognize \$0.6 billion of revenue during the noncancelable term of these O&M contracts over a weighted-average period of 11.9 years.

As part of our adoption of ASU 2014-09 in the first quarter of 2017, we have elected to use the practical expedient under ASC 606-10-65-1(f)(3), pursuant to which we have excluded disclosures of transaction prices allocated to remaining performance obligations and when we expect to recognize such revenue for all periods prior to the date of initial application of ASU 2014-09.

15. Share-Based Compensation

We measure share-based compensation expense at the grant date based on the fair value of the award and recognize such expense over the required or estimated service period for awards that vest. The following table presents the share-based compensation expense recognized in our condensed consolidated statements of operations for the three and nine months ended September 30, 2017 and 2016 (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2017	2016	2017	2016
Cost of sales	\$ 1,674	\$ 1,612	\$ 4,778	\$ 6,255
Research and development	1,641	849	4,230	2,704
Selling, general and administrative	6,678	3,435	16,375	15,508
Production start-up	112	—	144	—
Total share-based compensation expense	\$ 10,105	\$ 5,896	\$ 25,527	\$ 24,467

The following table presents share-based compensation expense by type of award for the three and nine months ended September 30, 2017 and 2016 (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2017	2016	2017	2016
Restricted and performance stock units	\$ 9,581	\$ 4,939	\$ 23,791	\$ 21,969
Unrestricted stock	459	420	1,297	1,258
Stock purchase plan	—	377	394	1,071
	10,040	5,736	25,482	24,298
Net amount released from inventory	65	160	45	169
Total share-based compensation expense	\$ 10,105	\$ 5,896	\$ 25,527	\$ 24,467

Share-based compensation expense capitalized in inventory was \$2.7 million as of September 30, 2017 and December 31, 2016. As of September 30, 2017, we had \$46.7 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 1.8 years. In April 2017, we amended our stock purchase plan to reduce the purchase discount from 15% to 4%, effective for the next six-month offering period. Accordingly, the plan is considered noncompensatory and no longer results in the recognition of share-based compensation expense.

In February 2017, the compensation committee of our board of directors approved a new long-term incentive program for key executive officers and associates. The new 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 new program consists of: (i) performance stock units to be earned over a three-year performance period beginning in March 2017 and (ii) stub-year grants of separate performance stock units to be earned over a two-year performance period also beginning in March 2017. Vesting of the performance stock units is contingent upon the achievement of certain performance objectives, including the relative attainment of target cost per watt and operating expense metrics and the continued employment of program participants through the applicable vesting dates, except in limited cases, such as death, disability, or a change-in-control of First Solar. Such performance stock units were included in the computation of diluted net income per share for the three and nine months ended September 30, 2017 based on the number of shares, if any, that would be issuable if the end of the reporting period were the end of the contingency period.

16. Income Taxes

Our effective tax rate was (11.4)% and (11.2)% for the nine months ended September 30, 2017 and 2016, respectively. The decrease in our effective tax rate was primarily driven by a discrete tax benefit associated with the May 2017 acceptance of our election to classify certain of our German subsidiaries as disregarded entities of First Solar, Inc., partially offset by a July 2016 private letter ruling in a foreign jurisdiction related to the timing of the deduction for certain of our obligations. Our provision for income taxes differed from the amount computed by applying the U.S. statutory federal income tax rate of 35.0% primarily due to the aforementioned discrete tax benefit related to the acceptance of our disregarded entity election and the beneficial impact of our Malaysian tax holiday, partially offset by additional tax expense attributable to losses in jurisdictions for which no tax benefit could be recorded.

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.

We account for uncertain tax positions pursuant to the recognition and measurement criteria under ASC 740, *Income Taxes*. During the three months ended September 30, 2017, we recognized a benefit of \$11.0 million from the expiration of the statute of limitations for various uncertain tax positions. It is reasonably possible that an additional \$10.0 million of uncertain tax positions will also be recognized within the next 12 months due to the expiration of the statute of limitations associated with such positions.

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 as of January 1, 2017. Accordingly, we recorded an estimated 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.

In July 2016, we received a letter from a foreign tax authority confirming our residency status in that jurisdiction. In accordance with the letter, we reversed a liability associated with an uncertain tax position related to the income of a foreign subsidiary. Accordingly, we recorded a benefit of \$35.4 million through the tax provision from the reversal of such liability during the three months ended September 30, 2016.

We are subject to audit by U.S. federal, state, local, and foreign tax authorities. We are currently under examination in India, Chile, Germany, and the state of California. We believe that adequate provisions have been made for any adjustments that may result from tax examinations. However, the outcome of tax audits cannot be predicted with certainty. If any issues addressed by our tax audits are not resolved in a manner consistent with our expectations, we could be required to adjust our provision for income taxes in the period such resolution occurs.

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17. Net Income per Share

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

The calculation of basic and diluted net income per share for the three and nine months ended September 30, 2017 and 2016 was as follows (in thousands, except per share amounts):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2017	2016	2017	2016
Basic net income per share				
Numerator:				
Net income	\$ 205,747	\$ 150,457	\$ 266,839	\$ 334,678
Denominator:				
Weighted-average common shares outstanding	104,432	103,339	104,287	102,496
Diluted net income per share				
Denominator:				
Weighted-average common shares outstanding	104,432	103,339	104,287	102,496
Effect of restricted and performance stock units and stock purchase plan shares	1,228	345	602	614
Weighted-average shares used in computing diluted net income per share	<u>105,660</u>	<u>103,684</u>	<u>104,889</u>	<u>103,110</u>
Net income per share:				
Basic	\$ 1.97	\$ 1.46	\$ 2.56	\$ 3.27
Diluted	\$ 1.95	\$ 1.45	\$ 2.54	\$ 3.25

The following table summarizes the potential shares of common stock that were excluded from the computation of diluted net income per share for the three and nine months ended September 30, 2017 and 2016 as they would have had an anti-dilutive effect (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2017	2016	2017	2016
Anti-dilutive shares	2	411	195	282

18. Accumulated Other Comprehensive Loss

Accumulated other comprehensive loss includes foreign currency translation adjustments, unrealized gains and losses on available-for-sale securities, and unrealized gains and losses on derivative instruments designated and qualifying as cash flow hedges. The following table presents the changes in accumulated other comprehensive loss, net of tax, for the nine months ended September 30, 2017 (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, 2016	\$ (77,178)	\$ 65,171	\$ 2,100	\$ (9,907)
Other comprehensive income (loss) before reclassifications	5,320	1,666	(3,993)	2,993
Amounts reclassified from accumulated other comprehensive loss	—	(49)	189	140
Net tax effect	—	(373)	1,291	918
Net other comprehensive income (loss)	5,320	1,244	(2,513)	4,051
Balance as of September 30, 2017	\$ (71,858)	\$ 66,415	\$ (413)	\$ (5,856)

The following table presents the pretax amounts reclassified from accumulated other comprehensive loss into our condensed consolidated statements of operations for the three and nine months ended September 30, 2017 and 2016 (in thousands):

Comprehensive Income Components	Income Statement Line Item	Amount Reclassified for the Three Months Ended September 30,		Amount Reclassified for the Nine Months Ended September 30,	
		2017	2016	2017	2016
Unrealized gain on marketable securities and restricted investments	Other income, net	\$ —	\$ 296	\$ 49	\$ 38,101
Unrealized (loss) gain on derivative contracts:					
Cross currency swap contract	Foreign currency loss, net	—	—	—	4,896
Interest rate and cross currency swap contracts	Interest expense, net	—	—	—	(1,823)
Foreign exchange forward contracts	Other income, net	(189)	—	(189)	—
		(189)	—	(189)	3,073
Total amount reclassified		\$ (189)	\$ 296	\$ (140)	\$ 41,174

19. Segment Reporting

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

In our reportable segment financial disclosures, we include an allocation of net sales value for all solar modules manufactured by our components segment and installed in projects sold or built by our systems segment in the net sales of our components segment. In the gross profit of our reportable segment disclosures, we include the corresponding cost of sales value for the solar modules installed in projects sold or built by our systems segment in the components segment. The cost of solar modules is comprised of the manufactured cost incurred by our components segment.

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See Note 23. “Segment and Geographical Information” in our Annual Report on Form 10-K for the year ended December 31, 2016 for a complete discussion of our segment reporting.

Financial information about our reportable segments during the three and nine months ended September 30, 2017 and 2016 was as follows (in thousands):

	Three Months Ended September 30, 2017			Three Months Ended September 30, 2016		
	Components	Systems	Total	Components	Systems	Total
Net sales	\$ 410,470	\$ 676,556	\$ 1,087,026	\$ 427,940	\$ 253,336	\$ 681,276
Gross profit	75,202	216,598	291,800	139,239	31,669	170,908
Depreciation and amortization expense	17,323	4,168	21,491	46,134	4,490	50,624

	Nine Months Ended September 30, 2017			Nine Months Ended September 30, 2016		
	Components	Systems	Total	Components	Systems	Total
Net sales	\$ 1,039,834	\$ 1,562,309	\$ 2,602,143	\$ 1,209,081	\$ 1,364,687	\$ 2,573,768
Gross profit	211,273	275,604	486,877	343,551	287,019	630,570
Depreciation and amortization expense	59,177	13,006	72,183	143,723	8,660	152,383

	September 30, 2017			December 31, 2016		
	Components	Systems	Total	Components	Systems	Total
Goodwill	\$ 14,462	\$ —	\$ 14,462	\$ 14,462	\$ —	\$ 14,462

Product Revenue

The following table sets forth the total amounts of solar module and solar power system net sales recognized for the three and nine months ended September 30, 2017 and 2016. For the purposes of the following table, (i) solar module revenue is composed of revenue from the sale of solar modules to third parties, which does not include any modules sold as part of our PV solar power systems, and (ii) solar power system revenue is composed of revenues from the sale of PV solar power systems and related products and services, including any modules installed in such systems and any revenue generated by such systems (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2017	2016	2017	2016
Solar module revenue	\$ 300,297	\$ 213,046	\$ 599,827	\$ 425,779
Solar power system revenue	786,729	468,230	2,002,316	2,147,989
Net sales	\$ 1,087,026	\$ 681,276	\$ 2,602,143	\$ 2,573,768

Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations

Cautionary Statement Regarding Forward-Looking Statements

This Quarterly Report on Form 10-Q 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 Quarterly Report on Form 10-Q, other than statements of historical fact, are forward-looking statements. These forward-looking statements are made pursuant to safe harbor provisions of the Private Securities Litigation Reform Act of 1995. The forward-looking statements include statements, among other things, concerning: effects resulting from certain module manufacturing changes and associated restructuring activities; our business strategy, including anticipated trends and developments in and management plans for our business and the markets in which we operate; future financial results, operating results, revenues, gross margin, operating expenses, products, projected costs (including estimated future module collection and recycling costs), warranties, solar module technology and cost reduction roadmaps, restructuring, product reliability, investments in unconsolidated affiliates, and capital expenditures; our ability to continue to reduce the cost per watt of our solar modules; the impact of public policies, such as tariffs or other trade remedies imposed on solar cells and modules; our ability to expand manufacturing capacity worldwide; our ability to reduce the costs to construct photovoltaic ("PV") solar power systems; research and development ("R&D") programs and our ability to improve the conversion efficiency of our solar modules; sales and marketing initiatives; and competition. In some cases, you can identify these statements by forward-looking words, such as "estimate," "expect," "anticipate," "project," "plan," "intend," "seek," "believe," "forecast," "foresee," "likely," "may," "should," "goal," "target," "might," "will," "could," "predict," "continue," and the negative or plural of these words, and other comparable terminology. Forward-looking statements are only predictions based on our current expectations and our projections about future events. All forward-looking statements included in this Quarterly Report on Form 10-Q are based upon information available to us as of the filing date of this Quarterly Report on Form 10-Q. You should not place undue reliance on these forward-looking statements. We undertake no obligation to update any of these forward-looking statements for any reason. These forward-looking statements involve known and unknown risks, uncertainties, and other factors that may cause our actual results, levels of activity, performance, or achievements to differ materially from those expressed or implied by these statements. These factors include, but are not limited to, the matters discussed in Part I, Item 1A. "Risk Factors" of our Annual Report on Form 10-K for the year ended December 31, 2016, elsewhere in this Quarterly Report on Form 10-Q, and our other reports filed with the Securities and Exchange Commission (the "SEC"). You should carefully consider the risks and uncertainties described under these sections.

The following discussion and analysis of our financial condition and results of operations should be read in conjunction with our condensed consolidated financial statements and the related notes thereto included in this Quarterly Report on Form 10-Q. Unless expressly stated or the context otherwise requires, the terms "the Company," "we," "us," "our," and "First Solar" refer to First Solar, Inc. and its subsidiaries. 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 PV solar power systems, the unit of electricity in watts for MW and GW is alternating current ("AC" or "ac") unless otherwise noted.

Executive Overview

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

Certain highlights of our financial results and other key operational developments for three months ended September 30, 2017 include the following:

- Net sales for the three months ended September 30, 2017 increased by 60% to \$1.1 billion compared to \$0.7 billion for the same period in 2016. The increase in net sales was primarily due to the sale of the California Flats and Cuyama projects and an increase in the volume of modules sold to third parties, partially offset by completion of substantially all construction activities on the East Pecos, Taylor, Astoria, and Desert Stateline projects in 2016.
- Gross profit for the three months ended September 30, 2017 increased 1.7 percentage points to 26.8% from 25.1% for the same period in 2016. The increase in gross profit was primarily driven by a mix of higher gross profit projects sold and under construction during the period and a reduction in our module collection and recycling liability, partially offset by reductions in the average selling price per watt of our modules sold to third parties.
- As of September 30, 2017, we had 18 installed production lines at our manufacturing facilities in Perrysburg, Ohio and Kulim, Malaysia. We produced 0.5 GW of solar modules during the three months ended September 30, 2017, which represented a 32% decrease from the same period in 2016. The decrease in production was primarily driven by our previously announced plans to ramp down production of our Series 4 modules and transition to Series 6 module manufacturing through 2019. Such transition is expected to include the commencement of operations at our previously announced manufacturing plant in Vietnam. We expect to produce approximately 2.3 GW of solar modules during 2017.
- During the three months ended September 30, 2017, we ran our remaining manufacturing facilities at 98% capacity utilization, which represented a 1 percentage point increase from the same period in 2016.
- The average conversion efficiency of our modules was 17.0% for the three months ended September 30, 2017, which was an improvement of 0.5 percentage points from the three months ended September 30, 2016.

Market Overview

The solar industry continues to be characterized by intense pricing competition, both at the module and system levels. In particular, module average selling prices in the United States and several other key markets have experienced an accelerated decline in recent years, and module average selling prices 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 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; engineering, procurement, and construction (“EPC”) companies; and vertically-integrated solar companies such as First Solar to sustain meaningful and consistent profitability. In light of such market realities, we are executing our long-term strategic plan, under which we are focusing on our competitive strengths. Such strengths include our advanced module and system technologies as well as our vertically-integrated business model that enables us to provide utility-scale PV solar energy solutions to key markets.

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Worldwide solar markets continue to develop, in part aided by demand elasticity resulting from declining industry average selling prices, both at the module and system levels, which make solar power more affordable. We are developing, constructing, and operating multiple solar projects around the world as we continue to execute on our advanced-stage utility-scale project pipeline. We expect a substantial portion of our future consolidated net sales, operating income, and cash flows to be derived from such projects. 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 project 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 project pipeline.

Lower industry module and system pricing, while currently challenging for certain solar manufacturers (particularly manufacturers with higher cost structures), is expected to continue to contribute to diversification in global electricity generation and further demand for solar energy solutions. Over time, we believe that solar energy generation will experience widespread adoption in those applications where it competes economically with traditional forms of energy generation. In the near term, however, declining average selling prices are expected to adversely affect our results of operations relative to prior years. If competitors reduce pricing to levels below their costs; bid aggressively low prices for module sale agreements, EPC agreements, or power purchase agreements (“PPAs”); or are able to operate at minimal or negative operating margins for sustained periods of time, our results of operations could be further adversely affected. In certain markets in California and elsewhere, an oversupply imbalance at the grid level may further contribute to reduced short-to-medium term demand for new solar installations relative to prior years, lower PPA pricing, and lower margins on module and system sales to such markets. We continue to mitigate these uncertainties in part by executing on our module technology improvements, including our transition to Series 6 module manufacturing, continuing the development of key markets, and implementing certain other cost reduction initiatives, including both manufacturing, balance of systems (“BoS”), and other operating costs.

We face intense competition from manufacturers of crystalline silicon solar modules and developers of PV solar power systems. Solar module manufacturers compete with one another on price and on several module value attributes, including conversion efficiency, energy yield, and reliability, and developers of systems compete on various factors such as net present value, return on equity, and 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. As noted above, competition on the basis of selling price per watt has intensified in recent years, which has contributed to declines in module average selling prices in several key markets. Many crystalline silicon cell and wafer manufacturers are transitioning 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”) multi-crystalline and 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 solar modules are pursuing the commercialization of bifacial modules that also capture diffuse irradiance on the back side of a module. We believe the cost effective manufacture of bifacial PERC modules is being enabled 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 can improve the overall energy production of a module relative to nameplate efficiency when applied in certain applications and BoS configurations, which 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 PV 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 fully integrated PV solar power systems is highly competitive. Our cost competitiveness is based in large part on our module conversion efficiency, proprietary manufacturing technology (which enables us to produce a cadmium telluride (“CdTe”) module in less than 3.5 hours using a continuous and highly automated industrial manufacturing process, as opposed to a batch process), and our operational excellence. In addition, our CdTe modules use approximately 1-2% of the amount of semiconductor material that is used to manufacture traditional crystalline silicon solar modules. The cost of polysilicon is a significant driver of the manufacturing cost of crystalline silicon solar modules, and the timing and rate of change in the cost of silicon feedstock and polysilicon could lead to changes in solar module pricing levels. Polysilicon costs have had periods of decline over the past several years, and polysilicon consumption per cell has been reduced through various initiatives, such as the adoption of diamond wire saw technology, contributing to a decline in our relative manufacturing cost competitiveness over traditional crystalline silicon module manufacturers.

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

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

While our modules and PV solar power systems are generally competitive in cost, reliability, and performance attributes, there can be no guarantee such competitiveness will continue to exist in the future to the same extent or at all. Any declines in the competitiveness of our products could result in additional margin compression, further declines in the average selling prices of our modules and systems, erosion in our market share for modules and systems, and/or declines in overall net sales. We continue to focus on enhancing the competitiveness of our solar modules and PV solar power systems by accelerating progress along our module technology and cost reduction roadmaps, continuing to make technological advances at the system level, using innovative installation techniques and know-how, and leveraging volume procurement around standardized hardware platforms.

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 Part I, Item 1A. "Risk Factors" of our Annual Report on Form 10-K for the year ended December 31, 2016 and Part II, Item 1A. of this Quarterly Report on Form 10-Q for discussion of other risks (the "Risk Factors") that may affect our financial condition and results of operations.

Long-Term Strategic Plan

Our long-term strategic plan is a long-term roadmap to achieve our technology, growth, and cost leadership objectives. In executing our long-term strategic plan, we are focusing on providing utility-scale PV solar energy solutions using our modules in key geographic markets that we believe have a compelling need for mass-scale PV electricity, including markets throughout the Americas, the Asia-Pacific region, and the Middle East. As part of our long-term strategic plan, we are focusing on opportunities in which our PV solar energy solutions can compete directly with traditional forms of energy generation on an LCOE or similar basis, or complement such generation offerings. Such 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 offerings in the next several years, we believe that utility-scale solar will continue to be a compelling solar offering for companies with technology and cost leadership and will continue to represent an increasing portion of the overall electricity generation mix.

We are closely evaluating and managing the appropriate level of resources required as we pursue the most advantageous and cost effective projects and partnerships in our target markets. We have dedicated, and intend to continue to dedicate, significant capital and human resources to reduce the total installed cost of PV solar energy, to optimize the design and logistics around our PV solar energy solutions, and to ensure that our solutions integrate well into the overall electricity ecosystem of each specific market. We expect that, over time, 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 plan are subject to risks and uncertainties, as described in the Risk Factors. We are focusing our resources on those markets and energy applications in which solar power can be a least-cost, best-fit energy solution, particularly in regions with high solar resources, significant current or projected electricity demand, and/or relatively high existing electricity prices.

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In order to create or maintain a market position in certain strategically targeted markets, our offerings from time to time may need to be competitively priced at levels associated with minimal gross profit margins, which may adversely affect our results of operations. We expect the profitability associated with our various sales offerings to vary from one another over time, and possibly vary from our internal long-range profitability expectations and targets, depending on the market opportunity and the relative competitiveness of our offerings compared with other energy solutions, traditional or otherwise, that are available to potential customers. In addition, as we execute on our long-term strategic plan, we will continue to monitor and adapt to any changing dynamics in the market set of potential buyers of solar 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.

From time to time, we may temporarily own and operate certain PV solar power systems with the intention to sell such systems at a later date. We may also elect to construct and temporarily retain ownership interests in systems for which there is no PPA with an off-taker, such as a utility, but rather an intent to sell the electricity produced by the system on an open contract basis until the system is sold. Expected revenue from projects without a PPA is subject to greater variability and uncertainty based on market factors and is typically lower than projects with a PPA. Additionally, our joint ventures and other business arrangements with strategic partners have and may in the future result in us temporarily retaining a noncontrolling ownership interest in the underlying systems projects we develop, supply modules to, or construct potentially for a period of up to several years. In each of the above mentioned examples, we may retain such ownership interests in a consolidated or unconsolidated separate entity.

We continually evaluate forecasted global demand, competition, and our addressable market, and seek to effectively balance manufacturing capacity with market demand and the nature and extent of our competition. In July 2017, we announced our plans to utilize our idled Vietnamese manufacturing plant for production of our next generation Series 6 module technology. This decision is expected to provide us with several operational benefits, including (i) the ability to add additional Series 6 production lines without ramping down current Series 4 production, (ii) flexibility in production capacity during our Series 6 transition period, and (iii) installing Series 6 production lines in a facility that is substantially identical to our Malaysian manufacturing plant where such lines are currently being installed, which is expected to accelerate and facilitate a cost-effective installation. Our Vietnamese plant and any other potential investments to add or otherwise modify our manufacturing capacity in response to market demand and competition may require significant internal and possibly external sources of liquidity and may be subject to certain risks and uncertainties described in the 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, such as our transition to Series 6 module manufacturing, and, when necessary, continue to build new manufacturing plants over time in response to such demand and add production lines in a cost-effective manner, all of which are subject to risks and uncertainties” and “If any future production lines are not built in line with our committed schedules it may impair any future growth plans. If any future production lines do not achieve operating metrics similar to our existing production lines, our solar modules could perform below expectations and cause us to lose customers.”

8point3 Energy Partners LP

In June 2015, 8point3 Energy Partners LP (the “Partnership”), a limited partnership formed by First Solar and SunPower Corporation (the “Sponsors”), completed its initial public offering (the “IPO”). As part of the IPO, we contributed interests in various projects to a subsidiary of the Partnership in exchange for an ownership interest in the entity. Since the formation of the Partnership, the Sponsors have, from time to time, continued to sell interests in solar projects to the Partnership, which owns and operates a portfolio of solar energy generation projects. In April 2017, we announced that we were reviewing alternatives for the sale of our interests in the Partnership. For additional information on the Partnership, see the Risk Factors in our Annual Report on Form 10-K for the year ended December 31, 2016 and “Note 11. Investments in Unconsolidated Affiliates and Joint Ventures – 8point3 Energy Partners LP” of our condensed consolidated financial statements included in this Quarterly Report on Form 10-Q.

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Systems Project Pipeline

The following tables summarize, as of October 26, 2017, our approximately 1.6 GW 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 1.2 to 1.3. Such ratio varies across different projects due to various system design factors. 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. Projects, or portions of projects, may also be removed from the tables below in the event an EPC-contracted or partner-developed project does not obtain permitting or financing, 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, such project based on strategic opportunities or market factors.

Projects Under Sales Agreements

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

Project/Location	Project Size in MW _{ac}	PPA Contracted Partner	EPC Contract/Partner Developed Project	Expected Year Revenue Recognition Will Be Completed	Percentage of Revenue Recognized as of September 30, 2017
California Flats, California	280	PG&E / Apple (1)	Capital Dynamics	2018	68%
India (multiple locations)	190	(2)	(5)	2017/2018	—%
Florida	70	(3)	(3)	2018	—%
Cuyama, California	40	PG&E	D.E. Shaw Renewable Investments	2017	78%
Japan (multiple locations)	9	(4)	Contracted but not specified	2017	—%
Total	589				

Projects with Executed PPAs Not Under Sales Agreements

Project/Location	Project Size in MW _{ac}	Fully Permitted	PPA Contracted Partner	Expected or Actual Substantial Completion Year	Percentage Complete as of September 30, 2017
Rosamond, California	150	Yes	SCE	2018	15%
Sun Streams, Arizona	150	Yes	SCE	2019	10%
Luz del Norte, Chile	141	Yes	(6)	2016	100%
American Kings Solar, California	126	No	SCE	2020	16%
Willow Springs, California	100	Yes	SCE	2018	21%
Sunshine Valley, Nevada	100	Yes	SCE	2019	3%
Ishikawa, Japan	59	Yes	Hokuriku Electric Power Company	2018	48%
Japan (multiple locations)	58	No	(4)	2019/2020	11%
Manildra, Australia	49	Yes	EnergyAustralia	2018	19%
Little Bear, California	40	No	Marin Clean Energy (7)	2020	5%
Miyagi, Japan	40	No	Tohoku Electric Power Company	2018/2019	12%
India (multiple locations)	40	Yes	(8)	2018	62%
Total	1,053				

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- (1) PG&E 150 MW_{ac} and Apple Energy, LLC 130 MW_{ac}
- (2) Southern Power Distribution Company of Telangana State Ltd – 110 MW_{ac} and Andhra Pradesh Southern Power Distribution Company Ltd – 80 MW_{ac}
- (3) Contracted but not specified
- (4) Hokuriku Electric Power Company and Tokyo Electric Power Company
- (5) Vector Green Energy Private Limited and India Infrastructure Fund II
- (6) PPAs executed for approximately 70 MW_{ac} of capacity; remaining electricity to be sold on an open contract basis
- (7) Expandable to 160 MW_{ac}, subject to satisfaction of certain PPA contract conditions
- (8) Gulbarga Electricity Supply Co. – 20 MW_{ac} and Chamundeshwari Electricity Supply Co. – 20 MW_{ac}

Results of Operations

The following table sets forth our condensed consolidated statements of operations as a percentage of net sales for the three and nine months ended September 30, 2017 and 2016:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2017	2016	2017	2016
Net sales	100.0 %	100.0 %	100.0 %	100.0 %
Cost of sales	73.2 %	74.9 %	81.3 %	75.5 %
Gross profit	26.8 %	25.1 %	18.7 %	24.5 %
Selling, general and administrative	4.6 %	8.9 %	5.7 %	7.4 %
Research and development	1.9 %	4.7 %	2.5 %	3.7 %
Production start-up	1.2 %	0.1 %	0.9 %	— %
Restructuring and asset impairments	0.1 %	0.6 %	1.5 %	3.5 %
Operating income	19.0 %	10.8 %	8.2 %	9.8 %
Foreign currency loss, net	(0.4)%	(0.3)%	(0.2)%	(0.3)%
Interest income	0.8 %	0.9 %	0.9 %	0.7 %
Interest expense, net	(0.4)%	(0.8)%	(0.8)%	(0.7)%
Other income, net	0.2 %	0.9 %	1.0 %	1.9 %
Income tax (expense) benefit	(0.7)%	10.0 %	1.0 %	1.3 %
Equity in earnings of unconsolidated affiliates, net of tax	0.4 %	0.7 %	0.2 %	0.3 %
Net income	18.9 %	22.1 %	10.3 %	13.0 %

Segment Overview

We operate our business in two segments. Our components segment involves the design, manufacture, and sale of CdTe solar modules, which convert sunlight into electricity, and our systems segment includes the development, construction, operation, and maintenance of PV solar power systems, which primarily use our solar modules. See Note 19. “Segment Reporting” to our condensed consolidated financial statements included with this Quarterly Report on Form 10-Q for more information. See also Item 2. “Management’s Discussion and Analysis of Financial Condition and Results of Operations – Systems Project Pipeline” for a description of the system projects in our advanced-stage project pipeline.

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Product Revenue

The following table sets forth the total amounts of solar module and solar power system net sales for the three and nine months ended September 30, 2017 and 2016. For the purpose of the following table, (i) solar module revenue is composed of revenue from the sale of solar modules to third parties, which does not include any modules sold as part of our PV solar power systems, and (ii) solar power system revenue is composed of revenue from the sale of PV solar power systems and related products and services, including any modules installed in such systems and any revenue generated by such systems:

(Dollars in thousands)	Three Months Ended September 30,				Nine Months Ended September 30,			
	2017	2016	Three Month Change		2017	2016	Nine Month Change	
Solar module revenue	\$ 300,297	\$ 213,046	\$ 87,251	41%	\$ 599,827	\$ 425,779	\$ 174,048	41 %
Solar power system revenue	786,729	468,230	318,499	68%	2,002,316	2,147,989	(145,673)	(7)%
Net sales	\$ 1,087,026	\$ 681,276	\$ 405,750	60%	\$ 2,602,143	\$ 2,573,768	\$ 28,375	1 %

Solar module revenue increased \$87.3 million for the three months ended September 30, 2017 compared to the three months ended September 30, 2016 primarily as a result of a 110% increase in the volume of watts sold, partially offset by a 33% decrease in the average selling price per watt. Solar power system revenue increased \$318.5 million for the three months ended September 30, 2017 compared to the three months ended September 30, 2016 primarily due to the sale of the California Flats and Cuyama projects in 2017, partially offset by completion of substantially all construction activities on the East Pecos, Taylor, Astoria, and Desert Stateline projects in 2016.

Solar module revenue increased \$174.0 million for the nine months ended September 30, 2017 compared to the nine months ended September 30, 2016 primarily as a result of a 105% increase in the volume of watts sold, partially offset by a 31% decrease in the average selling price per watt. Solar power system revenue decreased \$145.7 million for the nine months ended September 30, 2017 compared to the nine months ended September 30, 2016 primarily due to the completion of substantially all construction activities on a number of projects in 2016, including the Desert Stateline, Astoria, Taylor, Silver State South, East Pecos, Butler, and McCoy projects, partially offset by the sale of the Moapa, California Flats, and Switch Station projects in 2017.

Three and Nine Months Ended September 30, 2017 and 2016

Net sales

Components Business

We generally price and sell our solar modules per watt of nameplate power. During the three and nine months ended September 30, 2017, we sold the majority of our solar modules to integrators and operators of systems in the United States, India, and Turkey. Other than the modules sold to such third parties, net sales for our components business also included modules installed in our PV solar power systems described below under “Net Sales – Systems Business.” During the three and nine months ended September 30, 2017, substantially all of our components business net sales, excluding modules installed in our systems, were denominated in U.S. dollars. We recognize revenue for module sales 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, and our customers generally do not have extended payment terms. The revenue recognition policies for module sales are further described in Note 2. “Summary of Significant Accounting Policies” to our condensed consolidated financial statements included in this Quarterly Report on Form 10-Q.

Systems Business

Through our fully integrated systems business, we provide complete turn-key PV solar power systems, or solar solutions, which may include project development, EPC services, and O&M services. Additionally, we may temporarily own and operate, or retain interests in, certain of our PV solar power systems, which are also included within our systems business. We typically 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 system after the project has been completed due to the timing of 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 condensed consolidated financial statements included in this Quarterly Report on Form 10-Q.

The following table shows net sales by reportable segment for the three and nine months ended September 30, 2017 and 2016:

(Dollars in thousands)	Three Months Ended September 30,				Nine Months Ended September 30,			
	2017	2016	Three Month Change		2017	2016	Nine Month Change	
Components	\$ 410,470	\$ 427,940	\$ (17,470)	(4)%	\$ 1,039,834	\$ 1,209,081	\$ (169,247)	(14)%
Systems	676,556	253,336	423,220	167 %	1,562,309	1,364,687	197,622	14 %
Net sales	\$ 1,087,026	\$ 681,276	\$ 405,750	60 %	\$ 2,602,143	\$ 2,573,768	\$ 28,375	1 %

Net sales from our components segment, which includes solar modules used in our systems projects, decreased \$17.5 million for the three months ended September 30, 2017 compared to the three months ended September 30, 2016 primarily due to a 29% decrease in the average selling price per watt, partially offset by a 36% increase in the volume of watts sold. Net sales from our systems segment, which excludes solar modules used in our systems projects, increased \$423.2 million for the three months ended September 30, 2017 compared to the three months ended September 30, 2016 primarily as a result of the sale of the California Flats and Cuyama projects in 2017, partially offset by completion of substantially all construction activities on the East Pecos, Taylor, Astoria, and Desert Stateline projects in 2016.

Net sales from our components segment, which includes solar modules used in our systems projects, decreased \$169.2 million for the nine months ended September 30, 2017 compared to the nine months ended September 30, 2016 primarily due to a 27% decrease in the average selling price per watt, partially offset by an 18% increase in the volume of watts sold. Net sales from our systems segment, which excludes solar modules used in our systems projects,

increased \$197.6 million for the nine months ended September 30, 2016 primarily as a result of the sale of the Moapa, California Flats, and Switch Station projects in 2017, partially offset by the completion of substantially all construction activities on a number of projects in 2016, including the Desert Stateline, Astoria, Taylor, Silver State South, East Pecos, Butler, and McCoy projects.

Cost of sales

Components Business

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

We include the sale of solar modules manufactured by our components business and used by our systems business within net sales of our components business. Therefore, the related cost of sales is also included within our components business.

Systems Business

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

The following table shows cost of sales by reportable segment for the three and nine months ended September 30, 2017 and 2016:

(Dollars in thousands)	Three Months Ended September 30,		Three Month Change		Nine Months Ended September 30,		Nine Month Change	
	2017	2016			2017	2016		
Components	\$ 335,268	\$ 288,701	\$ 46,567	16%	\$ 828,561	\$ 865,530	\$ (36,969)	(4)%
Systems	459,958	221,667	238,291	107%	1,286,705	1,077,668	209,037	19 %
Total cost of sales	\$ 795,226	\$ 510,368	\$ 284,858	56%	\$ 2,115,266	\$ 1,943,198	\$ 172,068	9 %
% of net sales	73.2%	74.9%			81.3%	75.5%		

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Our cost of sales increased \$284.9 million, or 56%, and decreased 1.7 percentage points as a percent of net sales for the three months ended September 30, 2017 compared to the three months ended September 30, 2016. The increase in cost of sales was driven by a \$238.3 million increase in our systems segment cost of sales primarily due to the size of projects sold or under construction during the period and the timing of when all revenue recognition criteria were met, partially offset by a mix of higher gross profit projects. The increase in cost of sales was also driven by a \$46.6 million increase in our components segment cost of sales primarily as a result of higher costs of \$101.0 million from the increased volume of modules sold directly to third parties, partially offset by continued reductions in the cost per watt of our solar modules, which decreased cost of sales by \$45.4 million, and a reduction in our module collection and recycling liability of \$13.5 million from updates to several valuation assumptions, including a decrease in certain inflation rates.

Our cost of sales increased \$172.1 million, or 9%, and increased 5.8 percentage points as a percent of net sales for the nine months ended September 30, 2017 compared to the nine months ended September 30, 2016. The increase in cost of sales was driven by a \$209.0 million increase in our systems segment cost of sales primarily due to a mix of lower gross profit projects. This increase in cost of sales was partially offset by a \$37.0 million decrease in our components segment cost of sales primarily as a result of continued cost reductions in the cost per watt of our solar modules, which decreased cost of sales by \$151.0 million, the \$13.5 million reduction in our module collection and recycling liability described above, a \$12.5 million reduction in our product warranty liability due to lower legacy module replacement costs, and lower inventory write-downs of \$11.0 million, partially offset by higher costs of \$153.1 million from the increased volume of modules sold directly to third parties.

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 generated by our components and systems businesses.

The following table shows gross profit for the three and nine months ended September 30, 2017 and 2016:

(Dollars in thousands)	Three Months Ended September 30,			Nine Months Ended September 30,		
	2017	2016	Three Month Change	2017	2016	Nine Month Change
Gross profit	\$ 291,800	\$ 170,908	\$ 120,892 71%	\$ 486,877	\$ 630,570	\$ (143,693) (23)%
% of net sales	26.8%	25.1%		18.7%	24.5%	

Gross profit increased 1.7 percentage points to 26.8% during the three months ended September 30, 2017 from 25.1% during the three months ended September 30, 2016 primarily due to a mix of higher gross profit projects sold and under construction during the period and the reduction in our module collection and recycling liability described above, partially offset by reductions in the average selling price per watt of our modules sold directly to third parties. Gross profit decreased 5.8 percentage points to 18.7% during the nine months ended September 30, 2017 from 24.5% during the nine months ended September 30, 2016 primarily as a result of a mix of lower gross profit projects sold and under construction during the period and reductions in the average selling price per watt of our modules sold directly to third parties.

Selling, general and administrative

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

The following table shows selling, general and administrative expense for the three and nine months ended September 30, 2017 and 2016:

(Dollars in thousands)	Three Months Ended September 30,			Nine Months Ended September 30,		
	2017	2016	Three Month Change	2017	2016	Nine Month Change
Selling, general and administrative	\$ 50,546	\$ 60,345	\$ (9,799) (16)%	\$ 147,702	\$ 191,624	\$ (43,922) (23)%
% of net sales	4.6%	8.9%		5.7%	7.4%	

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Selling, general and administrative expense for the three months ended September 30, 2017 decreased compared to the three months ended September 30, 2016 primarily due to lower business development expenses, lower professional fees, and lower accretion expense associated with the reduction in our module collection and recycling liability described above. Selling, general and administrative expense for the nine months ended September 30, 2017 decreased compared to the nine months ended September 30, 2016 primarily as a result of lower employee compensation expense due to the various restructuring activities described in Note 4. “Restructuring and Asset Impairments” to our condensed consolidated financial statements included in this Quarterly Report on Form 10-Q, lower professional fees, lower infrastructure related expenses, and lower business development expenses.

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 process and product R&D activities; and depreciation and amortization expense associated with R&D specific facilities and equipment. We maintain a number of programs and activities to improve our technology and processes in order to enhance the performance and reduce the costs of our solar modules and PV solar power systems.

The following table shows research and development expense for the three and nine months ended September 30, 2017 and 2016:

(Dollars in thousands)	Three Months Ended September 30,			Nine Months Ended September 30,		
	2017	2016	Three Month Change	2017	2016	Nine Month Change
Research and development	\$ 20,850	\$ 32,173	\$ (11,323) (35)%	\$ 64,990	\$ 95,291	\$ (30,301) (32)%
% of net sales	1.9%	4.7%		2.5%	3.7%	

The decrease in research and development expense for the three and nine months ended September 30, 2017 compared to the three and nine months ended September 30, 2016 was primarily due to lower costs for third-party contracted services, reduced material and module testing costs, and lower employee compensation expense resulting from reductions to our R&D headcount as part of the restructuring activities further described in Note 4. “Restructuring and Asset Impairments” to our condensed consolidated financial statements included in this Quarterly Report on Form 10-Q. The decrease in research and development expense for the nine months ended September 30, 2017 was also attributable to the termination of certain R&D programs for legacy module technologies.

During the three months ended September 30, 2017, the average conversion efficiency of our CdTe solar modules produced was 17.0% compared to 16.5% for the three months ended September 30, 2016. During the nine months ended September 30, 2017, the average conversion efficiency of our CdTe solar modules produced was 16.8% compared to 16.3% for the nine months ended September 30, 2016.

Production start-up

Production start-up expense consists primarily of employee compensation and other costs associated with operating a production line before it has been qualified for full production, including the cost of raw materials for solar modules run through the production line during the qualification phase and applicable facility related costs. Costs related to equipment upgrades and implementation of manufacturing process improvements are also included in production start-up expense as well as costs related to the selection of a new site, 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 three and nine months ended September 30, 2017 and 2016:

(Dollars in thousands)	Three Months Ended September 30,			Nine Months Ended September 30,		
	2017	2016	Three Month Change	2017	2016	Nine Month Change
Production start-up	\$ 12,624	\$ 752	\$ 11,872 1,579%	\$ 22,155	\$ 807	\$ 21,348 2,645%
% of net sales	1.2%	0.1%		0.9%	—%	

During the three and nine months ended September 30, 2017, we incurred production start-up expense for the transition to Series 6 module manufacturing at our facilities in Perrysburg, Ohio; Kulim, Malaysia; and Ho Chi Minh City, Vietnam.

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Restructuring and asset impairments

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

The following table shows restructuring and asset impairments for the three and nine months ended September 30, 2017 and 2016:

(Dollars in thousands)	Three Months Ended September 30,			Nine Months Ended September 30,		
	2017	2016	Three Month Change	2017	2016	Nine Month Change
Restructuring and asset impairments	\$ 791	\$ 4,314	\$ (3,523) (82)%	\$ 39,108	\$ 89,846	\$ (50,738) (56)%
% of net sales	0.1%	0.6%		1.5%	3.5%	

During the three and nine months ended September 30, 2017 we incurred \$0.8 million and \$39.1 million, respectively, of restructuring and asset impairment charges associated with our transition to Series 6 module manufacturing. Such charges included net losses on the disposition of previously impaired Series 4 and Series 5 manufacturing equipment, severance benefits to terminated employees, and net miscellaneous charges, primarily related to contract terminations, the write-off of operating supplies, and other Series 4 manufacturing exit costs. See Note 4. "Restructuring and Asset Impairments" to our condensed consolidated financial statements included in this Quarterly Report on Form 10-Q for additional information. We expect to incur up to \$5 million of additional charges in 2017 as we continue the transition to Series 6 module manufacturing.

During the three and nine months ended September 30, 2016, we incurred \$4.3 million and \$89.8 million, respectively, of restructuring and asset impairment charges primarily related to our decision to end our crystalline silicon module production. These charges included impairments of certain crystalline silicon module manufacturing equipment, impairments of developed technology intangible assets for our crystalline silicon module technology, impairments of goodwill from the disposal of our crystalline silicon components reporting unit, and other miscellaneous charges. See Note 4. "Restructuring and Asset Impairments" to our condensed consolidated financial statements included in this Quarterly Report on Form 10-Q for additional information.

Foreign currency loss, net

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

The following table shows foreign currency loss, net for the three and nine months ended September 30, 2017 and 2016:

(Dollars in thousands)	Three Months Ended September 30,			Nine Months Ended September 30,		
	2017	2016	Three Month Change	2017	2016	Nine Month Change
Foreign currency loss, net	\$ (3,968)	\$ (2,296)	\$ (1,672) 73%	\$ (6,166)	\$ (8,259)	\$ 2,093 (25)%

Foreign currency loss, net for the three months ended September 30, 2017 increased compared to the three months ended September 30, 2016 primarily due to the weakening of the Indian rupee relative to the U.S. dollar and differences between our economic hedge positions and the underlying exposures. Foreign currency loss, net for the nine months ended September 30, 2017 decreased compared to the nine months ended September 30, 2016 primarily as a result of lower costs associated with hedging activities related to our subsidiaries in India, the weakening of the U.S. dollar relative to certain foreign currencies, and differences between our economic hedge positions and the underlying exposures.

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 three and nine months ended September 30, 2017 and 2016:

(Dollars in thousands)	Three Months Ended September 30,			Nine Months Ended September 30,		
	2017	2016	Three Month Change	2017	2016	Nine Month Change
Interest income	\$ 8,392	\$ 5,894	\$ 2,498 42%	\$ 22,364	\$ 18,829	\$ 3,535 19%

Interest income for the three and nine months ended September 30, 2017 increased compared to the three and nine months ended September 30, 2016 primarily due to higher cash balances during the period, increased interest rates associated with our cash and marketable securities, and a promissory note with an affiliate issued in late 2016.

Interest expense, net

Interest expense 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 ASC 815. We capitalize interest expense on 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 three and nine months ended September 30, 2017 and 2016:

(Dollars in thousands)	Three Months Ended September 30,			Nine Months Ended September 30,		
	2017	2016	Three Month Change	2017	2016	Nine Month Change
Interest expense, net	\$ (4,149)	\$ (5,563)	\$ 1,414 (25)%	\$ (19,692)	\$ (17,356)	\$ (2,336) 13%

Interest expense, net for the three months ended September 30, 2017 was consistent with the three months ended September 30, 2016. Interest expense, net for the nine months ended September 30, 2017 increased compared to the nine months ended September 30, 2016 primarily due to changes in the fair value of interest rate swap contracts that do not qualify for hedge accounting and higher levels of project specific debt financings, partially offset by lower interest expense associated with certain Malaysian credit facilities that were fully repaid in 2016.

Other income, net

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

The following table shows other income, net for the three and nine months ended September 30, 2017 and 2016:

(Dollars in thousands)	Three Months Ended September 30,			Nine Months Ended September 30,		
	2017	2016	Three Month Change	2017	2016	Nine Month Change
Other income, net	\$ 2,018	\$ 6,419	\$ (4,401) (69)%	\$ 25,180	\$ 48,725	\$ (23,545) (48)%

Other income, net decreased for the three months ended September 30, 2017 compared to the three months ended September 30, 2016 primarily due to the resolution of an outstanding matter with a former customer in 2016. Other income, net decreased for the nine months ended September 30, 2017 compared to the nine months ended September 30, 2016 primarily due to realized gains of \$37.8 million in early 2016 from the sale of certain restricted investments as part of an effort to align the currencies of the investments with those of the corresponding collection and recycling liabilities and a \$7.4 million reversal of the outstanding contingent consideration associated with our TetraSun acquisition as a result of our executive management's decision to end production of our crystalline silicon modules in June 2016, partially offset by an incremental settlement in 2017 associated with the resolution of the customer matter describe above.

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Income tax (expense) benefit

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

The following table shows income tax (expense) benefit for the three and nine months ended September 30, 2017 and 2016:

(Dollars in thousands)	Three Months Ended September 30,			Nine Months Ended September 30,		
	2017	2016	Three Month Change	2017	2016	Nine Month Change
Income tax (expense) benefit	\$ (7,580)	\$ 68,205	\$ (75,785) 111%	\$ 26,769	\$ 32,886	\$ (6,117) (19)%
Effective tax rate	3.6%	(87.7)%		(11.4)%	(11.2)%	

Our tax rate is affected by recurring items, such as tax rates in foreign jurisdictions and the relative amounts of income we earn in those jurisdictions. The rate is also affected by discrete items that may occur in any given period, but are not consistent from period to period. Income tax expense increased by \$75.8 million during the three months ended September 30, 2017 compared to the three months ended September 30, 2016 primarily as a result of a \$35.4 million reversal of a liability associated with an uncertain tax position in 2016, higher pretax income, and lower excess tax benefits associated with share-based compensation.

Income tax benefit decreased by \$6.1 million during the nine months ended September 30, 2017 compared to the nine months ended September 30, 2016 primarily due to a \$35.4 million reversal of a liability associated with an uncertain tax position in 2016 and lower excess tax benefits associated with share-based compensation, partially offset by a \$42.1 million discrete tax benefit associated with the acceptance of our election to classify certain of our German subsidiaries as disregarded entities of First Solar, Inc. and lower pre-tax income.

Equity in earnings of unconsolidated affiliates, net of tax

Equity in earnings of unconsolidated affiliates, net of tax represents our proportionate share of the earnings or losses of unconsolidated affiliates with whom we have made equity method investments.

The following table shows equity in earnings of unconsolidated affiliates, net of tax for the three and nine months ended September 30, 2017 and 2016:

(Dollars in thousands)	Three Months Ended September 30,			Nine Months Ended September 30,		
	2017	2016	Three Month Change	2017	2016	Nine Month Change
Equity in earnings of unconsolidated affiliates, net of tax	\$ 4,045	\$ 4,474	\$ (429) (10)%	\$ 5,462	\$ 6,851	\$ (1,389) (20)%

Equity in earnings of unconsolidated affiliates, net of tax for the three and nine months ended September 30, 2017 decreased compared to the three and nine months ended September 30, 2016 primarily due to lower equity in earnings of 8point3 Operating Company, LLC, partially offset by the deferral of certain profit on the sale of the Stateline project during the three and nine months ended September 30, 2016.

Critical Accounting Policies and Estimates

In preparing our condensed consolidated financial statements in conformity with accounting principles generally accepted in the United States, we make estimates and assumptions that affect the amounts of reported assets, liabilities, revenues, and expenses, as well as the disclosure of contingent liabilities. Some of our accounting policies require the application of significant judgment in the selection of the appropriate assumptions for making these estimates. By their nature, these judgments are subject to an inherent degree of uncertainty. We base our judgments and estimates on our historical experience, our forecasts, and other available information as appropriate. We believe that the judgments and estimates involved in over time revenue recognition, accrued solar module collection and recycling, product warranties, performance guarantees, indemnifications, accounting for income taxes, long-lived asset impairments, and testing goodwill for impairment have the greatest potential impact on our condensed consolidated financial statements. 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.

For a description of our critical accounting policies and estimates affecting revenue recognition, see Note 2. “Summary of Significant Accounting Policies” to our condensed consolidated financial statements included in this Quarterly Report on Form 10-Q. For a description of other critical accounting policies that affect our more significant judgments and estimates used in the preparation of our condensed consolidated financial statements, refer to our Annual Report on Form 10-K for the year ended December 31, 2016 filed with the SEC. With the exception of the changes to our revenue recognition policies referenced above, there have been no material changes to our critical accounting policies during the nine months ended September 30, 2017.

Recent Accounting Pronouncements

See Note 3. “Recent Accounting Pronouncements” to our condensed consolidated financial statements included in this Quarterly Report on Form 10-Q for a summary of recent accounting pronouncements.

Liquidity and Capital Resources

As of September 30, 2017, we believe that our cash, cash equivalents, marketable securities, cash flows from operating activities, advanced-stage project pipeline, availability under our senior secured revolving credit facility considering minimum liquidity covenant requirements, and access to the capital markets will be sufficient to meet our working capital, systems project investment, and capital expenditure needs for at least the next 12 months. We monitor our working capital to ensure we have adequate liquidity, both domestically and internationally.

We intend to maintain appropriate debt levels based upon cash flow expectations, our overall cost of capital, and expected cash requirements for operations, capital expenditures, and strategic discretionary spending. In the future, we may also engage in additional debt or equity financings, including project specific debt financings. We believe that when necessary, we will have adequate access to the capital markets, although our ability to raise capital on terms commercially acceptable to us could be constrained if there is insufficient lender or investor interest due to industry-wide or company-specific concerns. Such financings could result in increased debt service expenses, dilution to our existing stockholders, or restrictive covenants which require us to maintain certain financial conditions. As of September 30, 2017, we were in compliance with the covenants for all of our long-term debt facilities.

As of September 30, 2017, we had \$2.7 billion in cash, cash equivalents, and marketable securities compared to \$2.0 billion as of December 31, 2016. Cash, cash equivalents, and marketable securities as of September 30, 2017 increased primarily from the sale of the Moapa and California Flats projects and proceeds from borrowings under project specific debt financings, partially offset by purchases of property, plant and equipment. As of September 30, 2017 and December 31, 2016, \$1.5 billion and \$1.2 billion, respectively, of our cash, cash equivalents, and marketable securities was held by our foreign subsidiaries and was generally based in U.S. dollar, Malaysian ringgit, and Euro denominated holdings.

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

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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 \$0.5 billion as of September 30, 2017. Solar power project development and construction cycles, which span the time between the identification of a site location and the commercial operation of a system, vary substantially and can take many years to mature. As a result of these long project cycles and strategic decisions to finance the construction of certain projects 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 progress or in completing the sale of our systems projects that we are self-financing may also impact our liquidity. We have historically financed these up-front systems project investments primarily using working capital. In certain circumstances, we may need to finance construction costs exclusively using working capital, if project financing becomes unavailable due to market-wide, regional, or other concerns.

From time to time, we may partner with local developers on project development in markets around the world where we may take an equity stake in a project for a number of years. We are also self-developing projects in certain markets 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 until we can sell the systems on economically attractive terms. The decision to retain ownership of a system impacts liquidity depending upon the size and cost of the project. As of September 30, 2017, we had \$0.5 billion of net PV solar power systems that had been placed in service, primarily in international markets. We may elect to enter into temporary or long-term project financing to reduce the impact on our liquidity and working capital with regards to such projects and systems. We may also consider entering into tax equity or other arrangements with respect to ownership interests in certain of our projects, 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 for the remainder of 2017 and beyond:

- We expect to make significant capital investments through 2019 as we transition our production to Series 6 module technology and purchase the related manufacturing equipment and infrastructure. Such investments include the commencement of operations at our previously announced manufacturing plant in Vietnam. We expect the aggregate capital investment for Series 6 related programs to be approximately \$1.1 billion, which is expected to provide an annual Series 6 manufacturing capacity of approximately 4 GW. During the remainder of 2017, we expect to spend \$100 million to \$200 million for capital expenditures, the majority of which is associated with the Series 6 transition. We believe these capital expenditures will increase our aggregate manufacturing capacity, increase our solar module conversion efficiencies, reduce our manufacturing costs, and reduce the overall cost of systems using our modules.
- The balance of our solar module inventories and BoS parts was \$196.3 million as of September 30, 2017. As we continue with the construction of our advanced-stage project pipeline, we must produce solar modules and procure BoS parts in the required volumes to support our planned construction schedules. As part of this construction cycle, we typically must manufacture modules or acquire the necessary BoS parts for construction activities in advance of receiving payment for such materials, which may temporarily reduce our liquidity. Once solar modules and BoS parts are installed in a project, they are classified as either project assets, PV solar power systems, or cost of sales depending upon 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 integrators and operators of PV solar power systems. Such sales may require us to carry inventories at levels sufficient to satisfy the demand of our customers and the needs of their utility-scale projects, which may also temporarily reduce our liquidity.
- We may commit working capital during the remainder of 2017 and beyond to acquire solar power projects in various stages of development, including advanced-stage projects with PPAs, and to continue developing those projects as necessary. Depending upon the size and stage of development, costs to acquire such solar power projects could be significant. When evaluating project acquisition opportunities, we consider both the strategic and financial benefits of any such acquisitions.

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- We have initiatives in several markets to expedite our penetration of those markets and establish relationships with potential customers. Some of these arrangements involve and are expected to involve significant investments or other allocations of capital that could reduce our liquidity or require us to pursue additional sources of financing, assuming such sources are available to us. Additionally, we have elected and may in the future elect or be required to temporarily retain a noncontrolling ownership interest in certain underlying systems projects we develop, supply modules to, or construct. Any such retained ownership interest is expected to impact our liquidity to the extent we do not obtain new sources of capital to fund such investments.

Cash Flows

The following table summarizes the key cash flow metrics for the nine months ended September 30, 2017 and 2016 (in thousands):

	Nine Months Ended September 30,	
	2017	2016
Net cash provided by (used in) operating activities	\$ 906,719	\$ (61,673)
Net cash used in investing activities	(403,959)	(163,774)
Net cash provided by financing activities	151,606	462,270
Effect of exchange rate changes on cash, cash equivalents and restricted cash	9,420	6,742
Net increase in cash, cash equivalents and restricted cash	<u>\$ 663,786</u>	<u>\$ 243,565</u>

Operating Activities

The increase in net cash provided by operating activities was primarily driven by the sale of the Moapa and California Flats projects during the nine months ended September 30, 2017, partially offset by expenditures for the construction of certain project assets.

Investing Activities

The increase in net cash used in investing activities was primarily due to an increase in purchases of property, plant and equipment driven by our transition to Series 6 module manufacturing and net purchases of marketable securities and restricted investments of \$92.0 million during the nine months ended September 30, 2017 compared to net sales of \$25.7 million during the same period in 2016.

Financing Activities

The decrease in net cash provided by financing activities was primarily the result of \$550.0 million of proceeds from borrowings under our Revolving Credit Facility in 2016, partially offset by higher net proceeds from borrowings under our long-term debt arrangements associated with the construction of certain projects in Japan, India, and Australia and proceeds from commercial letters of credit for the construction of certain projects in India.

Contractual Obligations

Our contractual obligations have not materially changed since December 31, 2016 with the exception of borrowings under project specific debt financings and other changes in the ordinary course of business. See Note 12. "Debt" to our condensed consolidated financial statements included with this Quarterly Report on Form 10-Q for more information related to the changes in our long-term debt. See also our Annual Report on Form 10-K for the year ended December 31, 2016 for additional information regarding our contractual obligations.

Off-Balance Sheet Arrangements

As of September 30, 2017, we have no off-balance sheet debt or similar obligations, other than financial assurance related instruments and operating leases, which are not classified as debt. We do not guarantee any third-party debt. See Note 13. "Commitments and Contingencies" to our condensed consolidated financial statements included in this Quarterly Report on Form 10-Q for further information about our financial assurance related instruments.

Item 3. *Quantitative and Qualitative Disclosures about Market Risk*

There have been no material changes to the information previously provided under Item 7A. of our Annual Report on Form 10-K for the year ended December 31, 2016.

Item 4. *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 September 30, 2017 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.

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” as defined in Exchange Act Rule 13a-15(f) and 15d-15(f) to determine whether any changes in our internal control over financial reporting occurred during the three months ended September 30, 2017 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 materially affected, or are reasonably likely to materially affect, our internal control over financial reporting during the three months ended September 30, 2017.

CEO and CFO Certifications

We have attached as exhibits to this Quarterly Report on Form 10-Q the certifications of our Chief Executive Officer and Chief Financial Officer, which are required in accordance with the Exchange Act. We recommend that this Item 4. be read in conjunction with those certifications for a more complete understanding of the subject matter presented.

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.

PART II. OTHER INFORMATION

Item 1. *Legal Proceedings*

See Note 13. “Commitments and Contingencies” under the heading “Legal Proceedings” of our condensed consolidated financial statements included in this Quarterly Report on Form 10-Q for legal proceedings and related matters.

Item 1A. Risk Factors

In addition to the other information set forth in this report, you should carefully consider the factors discussed in Part I, Item 1A. “Risk Factors” in our Annual Report on Form 10-K for the year ended December 31, 2016, which could materially affect our business, financial condition, results of operations, or cash flows. The risks described in our Annual Report on Form 10-K for the year ended December 31, 2016 are not the only risks we face. Additional risks and uncertainties not currently known to us or that we currently consider immaterial may also materially adversely affect our business, financial condition, results of operations, or cash flows. Except for the updated risk factor appearing below, there have been no material changes in the risk factors contained in our Annual Report on Form 10-K for the year ended December 31, 2016.

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 profit remain subject to variability based on the availability and size of government subsidies and economic incentives. Federal, state, and local governmental bodies in many countries have provided subsidies in the form of feed-in-tariffs, 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 Part I, Item 1. “Business – Support Programs” in our Annual Report on Form 10-K for the year ended December 31, 2016. To the extent these support programs are reduced earlier than previously expected or are changed retroactively, such changes could reduce demand and/or price levels for our solar modules and systems, lead to a reduction in our net sales, and adversely impact our operating results. Another consideration in the U.S. market, and to a lesser extent in other global markets, is the effect of governmental land-use planning policies and environmental policies on utility-scale PV solar development. The adoption of restrictive land-use designations or environmental regulations that proscribe or restrict the siting of utility-scale solar facilities could adversely affect the marginal cost of such development.

In addition, 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, U.S. President Donald Trump announced that the U.S. 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 reducing the corporate tax rate and overturning or modifying policies of or regulations enacted by the prior administration that placed limitations on coal and gas electricity generation, mining, and/or exploration. For example, in October 2017, the U.S. Environmental Protection Agency Administrator issued a Notice of Proposed Rulemaking, proposing to repeal the Clean Power Plan, which establishes standards to limit carbon dioxide emissions from existing power generation facilities. If the current U.S. administration and/or the U.S. Congress takes action, or continues to publicly speak out about the need to take action, in furtherance of any such policies, we would be subject to significant risks, including the following:

- A reduction or removal of clean energy programs and initiatives and the incentives they provide may diminish the market for future solar energy offtake agreements and reduce the ability for solar developers to compete for future solar energy offtake agreements, which may reduce incentives for project developers to develop solar projects and purchase PV solar modules;
- Any limitations on the value or availability to potential investors of tax incentives that benefit solar energy projects such as the investment tax credit (“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 commences construction of up to 30% of eligible basis. A solar energy project must commence construction prior to January 1, 2020 and be placed in service prior to January 1, 2024 to qualify for the 30% ITC. A solar project that commences construction during 2020 and is placed in service prior to January 1, 2024 may qualify for an ITC equal to 26% of eligible basis. Under the Modified Accelerated Cost-Recovery System, owners of equipment used in a solar project generally claim all of their depreciation deductions with respect to such equipment over five years, even though the useful life of such equipment is generally greater than five years.

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

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 April 2017, a U.S.-based manufacturer of solar cells filed a petition under Sections 201 and 202 of the Trade Act of 1974 for global safeguard relief with the U.S. International Trade Commission (the “USITC”). Such petition requested, 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. In September 2017, the USITC determined such products are being imported into the United States in such increased quantities as to be a substantial cause of serious injury to the relevant domestic industry. The USITC has proceeded to the remedy phase of its investigation, following which it may recommend remedies, such as tariffs, quotas, or trade adjustment assistance, to the U.S. presidential administration. In October 2017, we submitted a letter in a non-party capacity to provide the USITC with information to inform its remedy recommendation. Thin-film solar cell products, such as our CdTe technology, are expressly excluded from the petition. However, it is unknown how the resolution of the petition, the scope or form of any resulting remedial action taken by the U.S. presidential administration, 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 First Solar’s business, financial condition, and results of operations.

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

Item 5. Other Information

None.

Item 6. Exhibits

The following exhibits are filed with or incorporated by reference into this Quarterly Report on Form 10-Q:

Exhibit Number	Exhibit Description
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
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
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
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	XBRL Taxonomy Label Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document

- * This exhibit shall not be deemed “filed” for purposes of Section 18 of the Exchange Act or otherwise subject to the liabilities of that section, nor shall it be deemed incorporated by reference in any filing 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 filings.

**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 Quarterly Report on Form 10-Q of First Solar, Inc., a Delaware corporation, for the period ended September 30, 2017, 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.

Date: October 26, 2017

/s/ MARK R. WIDMAR

Mark R. Widmar

Chief Executive Officer

**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 Quarterly Report on Form 10-Q of First Solar, Inc., a Delaware corporation, for the period ended September 30, 2017, 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.

Date: October 26, 2017

/s/ ALEXANDER R. BRADLEY

Alexander R. Bradley
Chief Financial Officer

**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 Quarterly Report on Form 10-Q of First Solar, Inc., a Delaware corporation, for the period ended September 30, 2017, 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 quarterly 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 quarterly report fairly presents, in all material respects, the financial condition and results of operations of First Solar, Inc. for the periods presented therein.

Date: October 26, 2017

/s/ MARK R. WIDMAR

Mark R. Widmar
Chief Executive Officer

Date: October 26, 2017

/s/ ALEXANDER R. BRADLEY

Alexander R. Bradley
Chief Financial Officer

