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, 2023

or

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

For the transition period from to

Commission file number: 001-33156

First Solar, Inc.

(Exact name of registrant as specified in its charter)

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

350 West Washington Street, Suite 600
Tempe, Arizona 85288
(Address of principal executive offices, including zip code)

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

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

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

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

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

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

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

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

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

As of October 27, 2023, 106,844,212 shares of the registrant's common stock, $0.001 par value per share, were outstanding.

FIRST SOLAR, INC.

FORM 10-Q FOR THE QUARTERLY PERIOD ENDED SEPTEMBER 30, 2023

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Throughout this Quarterly Report on Form 10-Q, we refer to First Solar, Inc. and its consolidated subsidiaries as "First Solar," "the Company," "we," "us," and "our." The unit of electricity is typically stated in megawatts ("MW") and gigawatts ("GW").

PART I. FINANCIAL INFORMATION

Item 1. *Condensed Consolidated Financial Statements (Unaudited)*

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

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2023	2022	2023	2022
Net sales	$ 801,090	$ 628,933	$ 2,160,049	$ 1,616,928
Cost of sales	424,915	607,951	1,361,403	1,607,683
Gross profit	376,175	20,982	798,646	9,245
Operating expenses:				
Selling, general and administrative	50,172	46,368	140,528	121,990
Research and development	41,190	29,183	108,445	81,520
Production start-up	12,059	19,768	54,930	40,337
Litigation loss	—	—	35,590	—
Total operating expenses	103,421	95,319	339,493	243,847
Gain on sales of businesses, net	211	5,984	329	253,272
Operating income (loss)	272,965	(68,353)	459,482	18,670
Foreign currency loss, net	(987)	(4,859)	(11,586)	(12,041)
Interest income	23,254	9,749	74,102	14,954
Interest expense, net	(3,734)	(2,991)	(5,897)	(9,092)
Other (expense) income, net	(1,033)	4,774	(1,492)	2,679
Income (loss) before taxes	290,465	(61,680)	514,609	15,170
Income tax (expense) benefit	(22,067)	12,512	(33,071)	(51,788)
Net income (loss)	$ 268,398	$ (49,168)	$ 481,538	$ (36,618)
Net income (loss) per share:				
Basic	$ 2.51	$ (0.46)	$ 4.51	$ (0.34)
Diluted	$ 2.50	$ (0.46)	$ 4.49	$ (0.34)
Weighted-average number of shares used in per share calculations:				
Basic	106,834	106,596	106,795	106,532
Diluted	107,498	106,596	107,326	106,532

See accompanying notes to these condensed consolidated financial statements.

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

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2023	**2022**	**2023**	**2022**
Net income (loss)	$ 268,398	$ (49,168)	$ 481,538	$ (36,618)
Other comprehensive loss:				
Foreign currency translation adjustments	(4,942)	(12,403)	(7,635)	(40,698)
Unrealized loss on marketable securities and restricted marketable securities, net of tax of $340, $697, $23, and $2,624	(8,696)	(13,884)	(3,045)	(53,372)
Unrealized gain (loss) on derivative instruments, net of tax of $(214), $905, $(1,087), and $2,540	719	(3,333)	3,527	(9,418)
Other comprehensive loss	(12,919)	(29,620)	(7,153)	(103,488)
Comprehensive income (loss)	$ 255,479	$ (78,788)	$ 474,385	$ (140,106)

See accompanying notes to these condensed consolidated financial statements.

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

	September 30, 2023	December 31, 2022
ASSETS		
Current assets:		
Cash and cash equivalents	$ 1,492,958	$ 1,481,269
Marketable securities	329,516	1,096,712
Accounts receivable trade, net	753,520	324,337
Accounts receivable unbilled	33,603	30,654
Inventories	882,787	636,312
Other current assets	331,618	222,137
Total current assets	3,824,002	3,791,421
Property, plant and equipment, net	4,072,857	3,536,902
Deferred tax assets, net	133,407	78,680
Restricted marketable securities	183,700	182,070
Government grants receivable	582,202	—
Goodwill	28,473	14,462
Intangible assets, net	66,379	31,106
Inventories	261,359	260,395
Other assets	430,266	356,192
Total assets	$ 9,582,645	$ 8,251,228
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 110,795	$ 341,409
Income taxes payable	33,583	29,397
Accrued expenses	600,421	382,782
Current portion of long-term debt	35,409	—
Deferred revenue	372,167	263,215
Other current liabilities	46,730	21,245
Total current liabilities	1,199,105	1,038,048
Accrued solar module collection and recycling liability	130,131	128,114
Long-term debt	464,040	184,349
Deferred revenue	1,349,602	944,725
Other liabilities	137,391	119,937
Total liabilities	3,280,269	2,415,173
Commitments and contingencies		
Stockholders' equity:		
Common stock, $0.001 par value per share; 500,000,000 shares authorized; 106,844,040 and 106,609,094 shares issued and outstanding at September 30, 2023 and December 31, 2022, respectively	107	107
Additional paid-in capital	2,879,412	2,887,476
Accumulated earnings	3,621,827	3,140,289
Accumulated other comprehensive loss	(198,970)	(191,817)
Total stockholders' equity	6,302,376	5,836,055
Total liabilities and stockholders' equity	$ 9,582,645	$ 8,251,228

See accompanying notes to these condensed consolidated financial statements.

FIRST SOLAR, INC.
CONDENSED CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(In thousands)
(Unaudited)

Three Months Ended September 30, 2023

	Common Stock		Additional Paid-In Capital	Accumulated Earnings	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
	Shares	Amount				
Balance at June 30, 2023	106,831	$ 107	$ 2,872,153	$ 3,353,429	$ (186,051)	$ 6,039,638
Net income	—	—	—	268,398	—	268,398
Other comprehensive loss	—	—	—	—	(12,919)	(12,919)
Common stock issued for share-based compensation	18	—	—	—	—	—
Tax withholding related to vesting of restricted stock	(5)	—	(853)	—	—	(853)
Share-based compensation expense	—	—	8,112	—	—	8,112
Balance at September 30, 2023	106,844	$ 107	$ 2,879,412	$ 3,621,827	$ (198,970)	$ 6,302,376

Three Months Ended September 30, 2022

	Common Stock		Additional Paid-In Capital	Accumulated Earnings	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
	Shares	Amount				
Balance at June 30, 2022	106,594	$ 107	$ 2,868,945	$ 3,197,005	$ (170,230)	$ 5,895,827
Net loss	—	—	—	(49,168)	—	(49,168)
Other comprehensive loss	—	—	—	—	(29,620)	(29,620)
Common stock issued for share-based compensation	15	—	—	—	—	—
Tax withholding related to vesting of restricted stock	(3)	—	(457)	—	—	(457)
Share-based compensation expense	—	—	11,755	—	—	11,755
Balance at September 30, 2022	106,606	$ 107	$ 2,880,243	$ 3,147,837	$ (199,850)	$ 5,828,337

See accompanying notes to these condensed consolidated financial statements.

FIRST SOLAR, INC.
CONDENSED CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(In thousands)
(Unaudited)

Nine Months Ended September 30, 2023

	Common Stock		Additional Paid-In Capital	Accumulated Earnings	Accumulated Other Comprehensive Loss	Total Equity
	Shares	Amount				
Balance at December 31, 2022	106,609	$ 107	$ 2,887,476	$ 3,140,289	$ (191,817)	$ 5,836,055
Net income	—	—	—	481,538	—	481,538
Other comprehensive loss	—	—	—	—	(7,153)	(7,153)
Common stock issued for share-based compensation	389	—	—	—	—	—
Tax withholding related to vesting of restricted stock	(154)	—	(31,100)	—	—	(31,100)
Share-based compensation expense	—	—	23,036	—	—	23,036
Balance at September 30, 2023	106,844	$ 107	$ 2,879,412	$ 3,621,827	$ (198,970)	$ 6,302,376

Nine Months Ended September 30, 2022

	Common Stock		Additional Paid-In Capital	Accumulated Earnings	Accumulated Other Comprehensive Loss	Total Equity
	Shares	Amount				
Balance at December 31, 2021	106,332	$ 106	$ 2,871,352	$ 3,184,455	$ (96,362)	$ 5,959,551
Net loss	—	—	—	(36,618)	—	(36,618)
Other comprehensive loss	—	—	—	—	(103,488)	(103,488)
Common stock issued for share-based compensation	441	1	—	—	—	1
Tax withholding related to vesting of restricted stock	(167)	—	(12,048)	—	—	(12,048)
Share-based compensation expense	—	—	20,939	—	—	20,939
Balance at September 30, 2022	106,606	$ 107	$ 2,880,243	$ 3,147,837	$ (199,850)	$ 5,828,337

See accompanying notes to these condensed consolidated financial statements.

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

	Nine Months Ended September 30,	
	2023	2022
Cash flows from operating activities:		
Net income (loss)	$ 481,538	$ (36,618)
Adjustments to reconcile net income (loss) to cash provided by operating activities:		
Depreciation, amortization and accretion	218,303	199,183
Impairments and net losses on disposal of long-lived assets	304	62,793
Share-based compensation	23,209	21,121
Deferred income taxes	(46,053)	(4,600)
Gain on sales of businesses, net	(329)	(253,272)
Other, net	89	(6,998)
Changes in operating assets and liabilities:		
Accounts receivable, trade and unbilled	(385,046)	177,020
Inventories	(247,729)	(164,205)
Project assets and PV solar power systems	8,626	(160,300)
Government grants receivable	(429,744)	—
Other assets	(149,635)	(49,071)
Income tax receivable and payable	(16,809)	40,902
Accounts payable and accrued expenses	121,382	(42,809)
Deferred revenue	472,934	293,872
Other liabilities	(9,889)	1,136
Net cash provided by operating activities	41,151	78,154
Cash flows from investing activities:		
Purchases of property, plant and equipment	(1,039,863)	(576,704)
Purchases of marketable securities	(3,220,467)	(2,278,125)
Proceeds from sales and maturities of marketable securities	3,996,439	1,870,973
Proceeds from sales of businesses, net of cash and restricted cash sold	—	363,898
Acquisitions, net of cash acquired	(35,739)	—
Other investing activities	—	(2,561)
Net cash used in investing activities	(299,630)	(622,519)
Cash flows from financing activities:		
Proceeds from borrowings under long-term debt, net of issuance costs	307,214	297,405
Repayment of long-term debt	—	(75,896)
Payments of tax withholdings for restricted shares	(31,100)	(12,048)
Net cash provided by financing activities	276,114	209,461
Effect of exchange rate changes on cash, cash equivalents, restricted cash, and restricted cash equivalents	(855)	39,866
Net increase (decrease) in cash, cash equivalents, restricted cash, and restricted cash equivalents	16,780	(295,038)
Cash, cash equivalents, restricted cash, and restricted cash equivalents, beginning of the period	1,493,462	1,455,837
Cash, cash equivalents, restricted cash, and restricted cash equivalents, end of the period	$ 1,510,242	$ 1,160,799
Supplemental disclosure of noncash investing and financing activities:		
Property, plant and equipment acquisitions funded by liabilities	$ 185,064	$ 163,147
Proceeds to be received from asset-based government grants	$ 152,458	$ —
Acquisitions funded by contingent consideration	$ 18,500	$ —
Proceeds to be received from sales of businesses	$ 208	$ 72,689

See accompanying notes to these condensed consolidated financial statements.

FIRST SOLAR, INC.

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 in this Quarterly Report have been prepared in accordance with generally accepted accounting principles 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. Certain prior period balances have been reclassified to conform to the current period presentation.

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 the financial statements and accompanying notes. Despite our intention to establish accurate estimates and reasonable assumptions, actual results could differ materially from such estimates and assumptions. Operating results for the three and nine months ended September 30, 2023 are not necessarily indicative of the results that may be expected for the year ending December 31, 2023 or for any other period. The condensed consolidated balance sheet at December 31, 2022 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, 2022 included in our Annual Report on Form 10-K, which has been filed with the SEC.

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 consolidated subsidiaries, and the term "condensed consolidated financial statements" refers to the accompanying unaudited condensed consolidated financial statements contained in this Quarterly Report.

2. Business Acquisitions

In May 2023, we acquired 100% of the shares of Evolar AB ("Evolar"), a developer of perovskite technology, for cash payments of $35.5 million, net of cash acquired of $0.5 million, and a promise to pay additional consideration of up to $42.5 million contingent on the achievement of certain technical milestones. The fair value of such contingent consideration was determined to be $18.5 million at the acquisition date. In connection with applying the acquisition method of accounting, $47.0 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 project, $15.0 million was assigned to goodwill, $9.2 million was assigned to a deferred tax liability, and $2.0 million was assigned to property, plant and equipment.

The acquired IPR&D includes technical information, know-how, and other proprietary information associated with certain production capabilities for perovskite technology. The acquisition is expected to accelerate the development of high efficiency multi-junction devices by integrating Evolar's know-how with First Solar's existing research and development ("R&D") capabilities, intellectual property portfolio, and expertise in developing and commercially scaling thin film photovoltaic ("PV") products. The goodwill is attributable to the acquired technical workforce of Evolar and the synergies the Company expects through integrating the acquired technology to accelerate the development of next-generation PV technology. The goodwill resulting from this transaction is not expected to be deductible for income tax purposes.

3. Sales of Businesses

Sale of Japan Project Development Business

In May 2022, we entered into various agreements with certain subsidiaries of PAG Real Assets (“PAG”), a private investment firm, for the sale of our Japan project development business. The transaction included our approximately 293 MW utility-scale solar project development platform, which comprised the business of developing, contracting for the construction of, and selling utility-scale PV solar power systems.

In June 2022, we completed the sale of our Japan project development business for an aggregate purchase price of ¥66.4 billion ($488.4 million), subject to certain customary post-closing adjustments. During the nine months ended September 30, 2022, we received proceeds of ¥56.8 billion ($419.2 million) and transferred cash and restricted cash of ¥8.4 billion ($61.9 million) to PAG. As a result of this transaction, we recognized a gain of $245.2 million, net of transaction costs, during the nine months ended September 30, 2022, which was included in “Gain on sales of businesses, net” in our condensed consolidated statements of operations.

During the three and nine months ended September 30, 2023, we recognized certain post-closing adjustments associated with the prior sale of our Japan project development business, which was included in “Gain on sales of businesses, net” in our condensed consolidated statements of operations.

Sales of International O&M Operations

In January 2022, we completed the sale of our Chilean operations and maintenance (“O&M”) operations to a subsidiary of Clairvest Group, Inc. (“Clairvest”) and received total consideration of $1.9 million. As a result of this transaction, we recognized a gain of $1.6 million, net of transaction costs and post-closing adjustments, during the nine months ended September 30, 2022, which was included in “Gain on sales of businesses, net” in our condensed consolidated statements of operations.

In September 2022, we completed the sale of our Australian O&M operations to a separate subsidiary of Clairvest for consideration of $6.6 million, subject to certain customary post-closing adjustments. Proceeds from the transaction were received in early October 2022. As a result of this transaction, we recognized a gain of $5.1 million, net of transaction costs, during the three months ended September 30, 2022, which was included in “Gain on sales of businesses, net” in our condensed consolidated statements of operations.

In September 2022, we also completed the sale of our Japanese O&M operations to a subsidiary of PAG for consideration of ¥660.0 million ($4.6 million), subject to certain customary post-closing adjustments. As a result of this transaction, we recognized a gain of $1.2 million, net of transaction costs, during the three months ended September 30, 2022, which was included in “Gain on sales of businesses, net” in our condensed consolidated statements of operations.

During the nine months ended September 30, 2023, we recognized certain post-closing adjustments associated with the prior sale of our O&M operations in a foreign jurisdiction, which was included in “Gain on sales of businesses, net” in our condensed consolidated statements of operations.

4. Cash, Cash Equivalents, and Marketable Securities

Cash, cash equivalents, and marketable securities consisted of the following at September 30, 2023 and December 31, 2022 (in thousands):

	September 30, 2023	December 31, 2022
Cash and cash equivalents:		
Cash	$ 1,034,684	$ 1,476,945
Money market funds	458,274	4,324
Total cash and cash equivalents	1,492,958	1,481,269
Marketable securities:		
Foreign debt	34,716	59,777
U.S. debt	43,701	56,463
U.S. Treasury securities	99,713	—
Time deposits	151,386	980,472
Total marketable securities	329,516	1,096,712
Total cash, cash equivalents, and marketable securities	$ 1,822,474	$ 2,577,981

The following table provides a reconciliation of cash, cash equivalents, restricted cash, and restricted cash equivalents reported within our condensed consolidated balance sheets as of September 30, 2023 and December 31, 2022 to the total of such amounts as presented in the condensed consolidated statements of cash flows (in thousands):

	Balance Sheet Line Item	September 30, 2023	December 31, 2022
Cash and cash equivalents	Cash and cash equivalents	$ 1,492,958	$ 1,481,269
Restricted cash – current	Other current assets	8,262	3,175
Restricted cash – noncurrent	Other assets	3,266	2,734
Restricted cash equivalents – noncurrent	Other assets	5,756	6,284
Total cash, cash equivalents, restricted cash, and restricted cash equivalents		$ 1,510,242	$ 1,493,462

During the nine months ended September 30, 2023, we sold marketable securities for proceeds of $34.9 million and realized a loss of less than $0.1 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, 2023 and December 31, 2022 (in thousands):

	As of September 30, 2023				
	Amortized Cost	Unrealized Gains	Unrealized Losses	Allowance for Credit Losses	Fair Value
Foreign debt	$ 35,000	$ —	$ 276	$ 8	$ 34,716
U.S. debt	45,562	15	1,864	12	43,701
U.S. Treasury securities	99,701	12	—	—	99,713
Time deposits	151,427	—	—	41	151,386
Total	$ 331,690	$ 27	$ 2,140	$ 61	$ 329,516

	As of December 31, 2022				
	Amortized Cost	Unrealized Gains	Unrealized Losses	Allowance for Credit Losses	Fair Value
Foreign debt	$ 59,940	$ —	$ 140	$ 23	$ 59,777
U.S. debt	58,308	—	1,823	22	56,463
Time deposits	980,810	—	—	338	980,472
Total	$ 1,099,058	$ —	$ 1,963	$ 383	$ 1,096,712

The contractual maturities of our marketable securities as of September 30, 2023 were as follows (in thousands):

	Fair Value
One year or less	$ 316,221
One year to two years	5,116
Two years to three years	4,451
Three years to four years	—
Four years to five years	—
More than five years	3,728
Total	$ 329,516

5. Restricted Marketable Securities

Restricted marketable securities consisted of the following as of September 30, 2023 and December 31, 2022 (in thousands):

	September 30, 2023	December 31, 2022
Foreign government obligations	$ 46,140	$ 46,886
Supranational debt	15,166	8,661
U.S. debt	105,336	109,328
U.S. government obligations	17,058	17,195
Total restricted marketable securities	$ 183,700	$ 182,070

Our restricted marketable securities represent long-term investments to fund the estimated future cost of collecting and recycling modules covered under our solar module collection and recycling program. 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. As of September 30, 2023 and December 31, 2022, such custodial accounts also included noncurrent restricted cash and cash equivalents balances of $5.8 million and $6.7 million, respectively, which were reported within “Other assets.”

Trust funds may be disbursed for qualified module collection and recycling costs (including capital and facility related recycling costs), payments to customers for assuming collection and recycling obligations, and reimbursements of any overfunded amounts. Investments in the trust must meet certain investment quality criteria comparable to highly rated government or agency bonds. As necessary, we fund any incremental amounts for our estimated collection and recycling obligations on an annual basis based on the estimated costs of collecting and recycling covered modules, estimated rates of return on our restricted marketable securities, and an estimated solar module life of 25 years, less amounts already funded in prior years. See Note 10. "Fair Value Measurements" to our condensed consolidated financial statements for information about the fair value of our restricted marketable securities.

The following tables summarize the unrealized gains and losses related to our restricted marketable securities, by major security type, as of September 30, 2023 and December 31, 2022 (in thousands):

	As of September 30, 2023				
	Amortized Cost	**Unrealized Gains**	**Unrealized Losses**	**Allowance for Credit Losses**	**Fair Value**
Foreign government obligations	$ 63,377	$ —	$ 17,227	$ 10	$ 46,140
Supranational debt	17,743	341	2,918	—	15,166
U.S. debt	146,938	—	41,574	28	105,336
U.S. government obligations	24,483	—	7,421	4	17,058
Total	$ 252,541	$ 341	$ 69,140	$ 42	$ 183,700

	As of December 31, 2022				
	Amortized Cost	**Unrealized Gains**	**Unrealized Losses**	**Allowance for Credit Losses**	**Fair Value**
Foreign government obligations	$ 64,008	$ —	$ 17,112	$ 10	$ 46,886
Supranational debt	11,146	—	2,485	—	8,661
U.S. debt	148,288	—	38,932	28	109,328
U.S. government obligations	24,551	—	7,352	4	17,195
Total	$ 247,993	$ —	$ 65,881	$ 42	$ 182,070

As of September 30, 2023, the contractual maturities of these securities were between 7 years and 16 years.

6. Consolidated Balance Sheet Details

Accounts receivable trade, net

Accounts receivable trade, net consisted of the following at September 30, 2023 and December 31, 2022 (in thousands):

	September 30, 2023	December 31, 2022
Accounts receivable trade, gross	$ 757,726	$ 325,379
Allowance for credit losses	(4,206)	(1,042)
Accounts receivable trade, net	$ 753,520	$ 324,337

Inventories

Inventories consisted of the following at September 30, 2023 and December 31, 2022 (in thousands):

	September 30, 2023	December 31, 2022
Raw materials	$ 445,412	$ 412,848
Work in process	92,494	66,641
Finished goods	606,240	417,218
Inventories	$ 1,144,146	$ 896,707
Inventories – current	$ 882,787	$ 636,312
Inventories – noncurrent	$ 261,359	$ 260,395

Other current assets

Other current assets consisted of the following at September 30, 2023 and December 31, 2022 (in thousands):

	September 30, 2023	December 31, 2022
Spare maintenance materials and parts	$ 144,820	$ 114,428
Prepaid expenses	51,736	43,262
Operating supplies	41,993	32,556
Insurance receivable for accrued litigation (1)	21,800	—
Prepaid income taxes	14,688	8,314
Restricted cash	8,262	3,175
Derivative instruments (2)	1,836	2,018
Other	46,483	18,384
Other current assets	$ 331,618	$ 222,137

(1) See Note 12. “Commitments and Contingencies” to our condensed consolidated financial statements for discussion of our legal proceedings.

(2) See Note 8. “Derivative Financial Instruments” to our condensed consolidated financial statements for discussion of our derivative instruments.

Property, plant and equipment, net

Property, plant and equipment, net consisted of the following at September 30, 2023 and December 31, 2022 (in thousands):

	September 30, 2023	December 31, 2022
Land	$ 35,240	$ 35,259
Buildings and improvements	998,516	893,049
Machinery and equipment	3,561,843	2,762,801
Office equipment and furniture	157,510	146,467
Leasehold improvements	40,064	40,160
Construction in progress	964,135	1,121,938
Property, plant and equipment, gross	5,757,308	4,999,674
Accumulated depreciation	(1,684,451)	(1,462,772)
Property, plant and equipment, net	$ 4,072,857	$ 3,536,902

Depreciation of property, plant and equipment was $80.7 million and $223.5 million for the three and nine months ended September 30, 2023, respectively, and $61.6 million and $180.2 million for the three and nine months ended September 30, 2022, respectively.

Other assets

Other assets consisted of the following at September 30, 2023 and December 31, 2022 (in thousands):

	September 30, 2023	December 31, 2022
Advance payments for raw materials	$ 163,192	$ 91,260
Operating lease assets (1)	81,512	93,185
Income tax receivables	70,818	56,993
Project assets	26,906	30,108
Prepaid expenses	22,443	11,714
Restricted cash equivalents	5,756	6,284
Accounts receivable unbilled, net	4,691	11,498
Restricted cash	3,266	2,734
Accounts receivable trade, net	—	1,500
Other	51,682	50,916
Other assets	$ 430,266	$ 356,192

(1) See Note 9. “Leases” to our condensed consolidated financial statements for discussion of our lease arrangements.

Accrued expenses

Accrued expenses consisted of the following at September 30, 2023 and December 31, 2022 (in thousands):

	September 30, 2023	December 31, 2022
Accrued inventory	$ 232,503	$ 44,679
Accrued property, plant and equipment	178,077	148,777
Accrued freight	64,668	77,136
Accrued compensation and benefits	37,697	47,939
Accrued other taxes	20,172	19,765
Product warranty liability (1)	7,647	10,660
Other	59,657	33,826
Accrued expenses	$ 600,421	$ 382,782

(1) See Note 12. “Commitments and Contingencies” to our condensed consolidated financial statements for discussion of our “Product Warranties.”

Other current liabilities

Other current liabilities consisted of the following at September 30, 2023 and December 31, 2022 (in thousands):

	September 30, 2023	December 31, 2022
Accrued litigation (1)	$ 21,800	$ —
Operating lease liabilities (2)	9,647	9,193
Contingent consideration (3)	7,500	—
Derivative instruments (4)	2,959	6,668
Other	4,824	5,384
Other current liabilities	$ 46,730	$ 21,245

(1) See Note 12. “Commitments and Contingencies” to our condensed consolidated financial statements for discussion of our legal proceedings.

(2) See Note 9. “Leases” to our condensed consolidated financial statements for discussion of our lease arrangements.

(3) See Note 12. “Commitments and Contingencies” to our condensed consolidated financial statements for discussion of our contingent consideration arrangements.

(4) See Note 8. “Derivative Financial Instruments” to our condensed consolidated financial statements for discussion of our derivative instruments.

Other liabilities

Other liabilities consisted of the following at September 30, 2023 and December 31, 2022 (in thousands):

	September 30, 2023	December 31, 2022
Deferred tax liabilities, net	$ 47,632	$ 28,929
Operating lease liabilities (1)	34,222	40,589
Product warranty liability (2)	18,500	23,127
Contingent consideration (3)	11,000	—
Other	26,037	27,292
Other liabilities	$ 137,391	$ 119,937

(1) See Note 9. "Leases" to our condensed consolidated financial statements for discussion of our lease arrangements.

(2) See Note 12. "Commitments and Contingencies" to our condensed consolidated financial statements for discussion of our "Product Warranties."

(3) See Note 12. "Commitments and Contingencies" to our condensed consolidated financial statements for discussion of our contingent consideration arrangements.

7. Government Grants

Government grants represent benefits provided by federal, state, or local governments that are not subject to the scope of ASC 740. We recognize a grant when we have reasonable assurance that we will comply with the grant's conditions and that the grant will be received. Government grants whose primary condition is the purchase, construction, or acquisition of a long-lived asset are considered asset-based grants and are recognized as a reduction to such asset's cost-basis, which reduces future depreciation. Other government grants not related to long-lived assets are considered income-based grants, which are recognized as a reduction to the related cost of activities that generated the benefit.

The following table presents the benefits recognized from asset-based government grants in our condensed consolidated balance sheet as of September 30, 2023 and December 31, 2022 (in thousands):

Balance Sheet Line Item	September 30, 2023	December 31, 2022
Property, plant and equipment, net	$ 146,596	$ —
Other assets	5,862	—

In February 2021, the state government of Tamil Nadu granted First Solar certain incentives associated with the construction of our first manufacturing facility in India. Among other things, such incentives provide a 24% subsidy for eligible capital investments, contingent upon meeting certain minimum investment and employment commitments. The capital subsidy is expected to be paid in six annual installments beginning in the fiscal year following the initial period of module production. Module production began during the three months ended September 30, 2023. Such credit is reflected on our condensed consolidated balance sheets within "Government grants receivable."

The following table presents the benefits recognized from income-based government grants in our condensed consolidated statements of operations for the three and nine months ended September 30, 2023 and 2022 (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
Income Statement Line Item	**2023**	**2022**	**2023**	**2022**
Cost of sales	$ 204,623	$ —	$ 429,744	$ —

In August 2022, the U.S. President signed into law the Inflation Reduction Act of 2022 (“IRA”). Among other things, the IRA offers a tax credit, pursuant to Section 45X of the Internal Revenue Code (“IRC”), for solar modules and solar module components manufactured in the United States and sold to third parties. Such credit may be refundable or transferable to a third party and is available from 2023 to 2032, subject to phase down beginning in 2030. For eligible components, the credit is equal to (i) $12 per square meter for a PV wafer, (ii) 4 cents multiplied by the capacity of a PV cell, and (iii) 7 cents multiplied by the capacity of a PV module. Based on the current form factor of our modules, we expect to qualify for a credit of approximately 17 cents per watt for each module produced in the United States and sold to a third party. We recognize such credit as a reduction to “Cost of sales” in the period the modules are sold to customers. Such credit is also reflected on our condensed consolidated balance sheets within “Government grants receivable.”

8. Derivative Financial Instruments

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

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

The following tables present the fair values of derivative instruments included in our condensed consolidated balance sheets as of September 30, 2023 and December 31, 2022 (in thousands):

	September 30, 2023	
	Other Current Assets	Other Current Liabilities
Derivatives designated as hedging instruments:		
Commodity swap contracts	$ —	$ 1,478
Total derivatives designated as hedging instruments	$ —	$ 1,478
Derivatives not designated as hedging instruments:		
Foreign exchange forward contracts	$ 1,836	$ 1,481
Total derivatives not designated as hedging instruments	$ 1,836	$ 1,481
Total derivative instruments	$ 1,836	$ 2,959

	December 31, 2022			
	Other Current Assets	Other Assets	Other Current Liabilities	Other Liabilities
Derivatives designated as hedging instruments:				
Commodity swap contracts	$ —	$ 17	$ 4,447	$ 144
Total derivatives designated as hedging instruments	$ —	$ 17	$ 4,447	$ 144
Derivatives not designated as hedging instruments:				
Foreign exchange forward contracts	$ 2,018	$ —	$ 2,221	$ —
Total derivatives not designated as hedging instruments	$ 2,018	$ —	$ 2,221	$ —
Total derivative instruments	$ 2,018	$ 17	$ 6,668	$ 144

The following table presents the pretax amounts related to derivative instruments designated as cash flow hedges affecting accumulated other comprehensive income (loss) and our condensed consolidated statements of operations for the nine months ended September 30, 2023 and 2022 (in thousands):

	Foreign Exchange Forward Contracts	Commodity Swap Contracts	Total
Balance as of December 31, 2022	$ —	$ (7,242)	$ (7,242)
Amounts recognized in other comprehensive income (loss)	—	(962)	(962)
Amounts reclassified to earnings impacting:			
Cost of sales	—	5,576	5,576
Balance as of September 30, 2023	$ —	$ (2,628)	$ (2,628)
Balance as of December 31, 2021	$ 1,126	$ —	$ 1,126
Amounts recognized in other comprehensive income (loss)	545	(10,832)	(10,287)
Amounts reclassified to earnings impacting:			
Cost of sales	(1,671)	—	(1,671)
Balance as of September 30, 2022	$ —	$ (10,832)	$ (10,832)

During the nine months ended September 30, 2022, we recognized unrealized losses of less than $0.1 million within “Cost of sales” for amounts excluded from effectiveness testing for our foreign exchange forward contracts designated as cash flow hedges.

The following table presents gains and losses related to derivative instruments not designated as hedges affecting our condensed consolidated statements of operations for the three and nine months ended September 30, 2023 and 2022 (in thousands):

		Amount of Gain (Loss) Recognized in Income			
		Three Months Ended September 30,		Nine Months Ended September 30,	
	Income Statement Line Item	2023	2022	2023	2022
Foreign exchange forward contracts	Cost of sales	$ —	$ 55	$ —	$ 577
Foreign exchange forward contracts	Foreign currency loss, net	4,533	7,905	(9,568)	71,420

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, from time to time we may enter into foreign exchange forward contracts to hedge a portion of these forecasted cash flows. These foreign exchange forward contracts qualify for accounting as cash flow hedges in accordance with Accounting Standards Codification ("ASC") 815, and we designated them as such. We report unrealized gains or losses on such contracts in "Accumulated other comprehensive loss" and subsequently reclassify applicable amounts into earnings when the hedged transaction occurs and impacts earnings.

Transaction Exposure and Economic Hedging

Many of our subsidiaries have assets and liabilities (primarily cash, receivables, deferred taxes, payables, accrued expenses, operating lease liabilities, long-term 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.

As of September 30, 2023 and December 31, 2022, 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):

	September 30, 2023		
Transaction	Currency	Notional Amount	USD Equivalent
Sell	Canadian dollar	CAD 4.2	$3.1
Sell	Chilean peso	CLP 1,372.6	$1.5
Purchase	Euro	€63.9	$67.3
Sell	Euro	€23.5	$24.8
Sell	Indian rupee	INR 57,797.8	$695.1
Purchase	Japanese yen	¥695.6	$4.7
Sell	Japanese yen	¥709.2	$4.7
Purchase	Malaysian ringgit	MYR 160.7	$34.1
Sell	Malaysian ringgit	MYR 16.5	$3.5
Sell	Mexican peso	MXN 34.6	$2.0
Sell	Singapore dollar	SGD 12.3	$9.0

	December 31, 2022		
Transaction	Currency	Notional Amount	USD Equivalent
Sell	Canadian dollar	CAD 4.2	$3.1
Sell	Chilean peso	CLP 5,996.5	$7.0
Purchase	Euro	€160.2	$170.5
Sell	Euro	€38.4	$40.9
Sell	Indian rupee	INR 27,119.5	$327.4
Purchase	Japanese yen	¥2,982.7	$22.4
Sell	Japanese yen	¥8,950.3	$67.1
Purchase	Malaysian ringgit	MYR 99.8	$22.6
Sell	Malaysian ringgit	MYR 13.7	$3.1
Sell	Mexican peso	MXN 34.6	$1.8
Purchase	Singapore dollar	SGD 1.4	$1.0

Commodity Price Risk

We use commodity swap contracts to mitigate our exposure to commodity price fluctuations for certain raw materials used in the production of our modules. During the year ended December 31, 2022, we entered into various commodity swap contracts to hedge a portion of our forecasted cash flows for purchases of aluminum frames between July 2022 and December 2023. Such swaps had an aggregate initial notional value based on metric tons of forecasted aluminum purchases, equivalent to $70.5 million, and entitle us to receive a three-month average London Metals Exchange price for aluminum while requiring us to pay certain fixed prices. The notional amount of the commodity swap contracts proportionately adjusted with forecasted purchases of aluminum frames. As of September 30, 2023, there was no notional value associated with these contracts.

These commodity swap contracts qualify for accounting as cash flow hedges in accordance with ASC 815, and we designated them as such. We report unrealized gains or losses on such contracts in “Accumulated other comprehensive loss” and subsequently reclassify applicable amounts into earnings when the hedged transactions occur and impact earnings. We determined that these derivative financial instruments were highly effective as cash flow hedges as of September 30, 2023 and December 31, 2022. In the following 12 months, we expect to reclassify into earnings $2.6 million of net unrealized losses related to these commodity swap contracts that are included in “Accumulated other comprehensive loss” at September 30, 2023 as we realize the earnings effects of the related forecasted transactions.

9. Leases

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

The following table presents certain quantitative information related to our lease arrangements for the three and nine months ended September 30, 2023 and 2022, and as of September 30, 2023 and December 31, 2022 (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2023	2022	2023	2022
Operating lease cost	$ 2,980	$ 3,034	$ 8,931	$ 11,643
Variable lease cost	512	635	2,528	1,838
Short-term lease cost	150	48	318	300
Total lease cost	$ 3,642	$ 3,717	$ 11,777	$ 13,781
Payments of amounts included in the measurement of operating lease liabilities			$ 8,513	$ 11,867
Lease assets obtained in exchange for operating lease liabilities			$ 1,791	$ 3,992

	September 30, 2023	December 31, 2022
Operating lease assets	$ 81,512	$ 93,185
Operating lease liabilities – current	9,647	9,193
Operating lease liabilities – noncurrent	34,222	40,589
Weighted-average remaining lease term	5 years	6 years
Weighted-average discount rate	5.1 %	5.1 %

As of September 30, 2023, the future payments associated with our lease liabilities were as follows (in thousands):

	Total Lease Liabilities
Remainder of 2023	$ 2,903
2024	11,340
2025	10,365
2026	8,255
2027	5,760
2028	5,873
Thereafter	5,313
Total future payments	49,809
Less: interest	(5,940)
Total lease liabilities	$ 43,869

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 and Restricted Cash Equivalents.* At September 30, 2023 and December 31, 2022, our cash equivalents and restricted cash equivalents consisted of money market funds. We value our cash equivalents and restricted cash equivalents using observable inputs that reflect quoted prices for securities with identical characteristics and classify the valuation techniques that use these inputs as Level 1.

- *Marketable Securities and Restricted Marketable Securities.* At September 30, 2023 and December 31, 2022, our marketable securities consisted of foreign debt, U.S. debt, U.S. Treasury securities, and time deposits, and our restricted marketable securities consisted of foreign and U.S. government obligations, supranational debt, and U.S. debt. We value our marketable securities and restricted marketable securities 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, 2023 and December 31, 2022, our derivative assets and liabilities consisted of foreign exchange forward contracts involving major currencies and commodity swap contracts involving major commodity prices. 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 credit risk, foreign exchange rates, forward and spot prices for currencies, and forward prices for commodities. These inputs are observable in active markets over the contract term of the derivative instruments we hold, and accordingly, we classify the valuation techniques as Level 2. In evaluating credit risk, we consider the effect of our counterparties' and our own credit standing in the fair value measurements of our derivative assets and liabilities, respectively.

At September 30, 2023 and December 31, 2022, the fair value measurements of our assets and liabilities measured on a recurring basis were as follows (in thousands):

		Fair Value Measurements at Reporting Date Using		
	September 30, 2023	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	$ 458,274	$ 458,274	$ —	$ —
Restricted cash equivalents:				
Money market funds	5,756	5,756	—	—
Marketable securities:				
Foreign debt	34,716	—	34,716	—
U.S. debt	43,701	—	43,701	—
U.S. Treasury securities	99,713	99,713	—	—
Time deposits	151,386	151,386	—	—
Restricted marketable securities	183,700	—	183,700	—
Derivative assets	1,836	—	1,836	—
Total assets	$ 979,082	$ 715,129	$ 263,953	$ —
Liabilities:				
Derivative liabilities	$ 2,959	$ —	$ 2,959	$ —

		Fair Value Measurements at Reporting Date Using		
	December 31, 2022	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	$ 4,324	$ 4,324	$ —	$ —
Restricted cash equivalents:				
Money market funds	6,284	6,284	—	—
Marketable securities:				
Foreign debt	59,777	—	59,777	—
U.S. debt	56,463	—	56,463	—
Time deposits	980,472	980,472	—	—
Restricted marketable securities	182,070	—	182,070	—
Derivative assets	2,035	—	2,035	—
Total assets	$ 1,291,425	$ 991,080	$ 300,345	$ —
Liabilities:				
Derivative liabilities	$ 6,812	$ —	$ 6,812	$ —

Fair Value of Financial Instruments

At September 30, 2023 and December 31, 2022, the carrying values and fair values of our financial instruments not measured at fair value were as follows (in thousands):

	September 30, 2023		December 31, 2022	
	Carrying Value	Fair Value	Carrying Value	Fair Value
Assets:				
Government grants receivable - noncurrent	$ 582,202	$ 541,753	$ —	$ —
Accounts receivable unbilled, net - noncurrent	4,691	4,062	11,498	10,304
Accounts receivable trade, net - noncurrent	—	—	1,500	1,339
Liabilities:				
Long-term debt (1)	$ 500,000	$ 450,040	$ 185,000	$ 160,986

(1) Excludes unamortized issuance costs.

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

Credit Risk

We have certain financial and derivative instruments that subject us to credit risk. These consist primarily of cash, cash equivalents, marketable securities, accounts receivable, restricted cash, restricted cash equivalents, restricted marketable securities, foreign exchange forward contracts, and commodity swap contracts. We are exposed to credit losses in the event of nonperformance by the counterparties to our financial and derivative instruments. We place these instruments with various high-quality financial institutions and limit the amount of credit risk from any one counterparty. We monitor 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. We typically require some form of payment security from our customers, including, but not limited to, advance payments, parent guarantees, letters of credit, bank guarantees, or surety bonds.

11. Debt

Our long-term debt consisted of the following at September 30, 2023 and December 31, 2022 (in thousands):

		Balance (USD)	
Loan Agreement	Currency	September 30, 2023	December 31, 2022
Revolving Credit Facility	USD	$ —	$ —
India Credit Facility	USD	500,000	185,000
Long-term debt principal		500,000	185,000
Less: unamortized issuance costs		(551)	(651)
Total long-term debt		499,449	184,349
Less: current portion		(35,409)	—
Noncurrent portion		$ 464,040	$ 184,349

Revolving Credit Facility

In June 2023, we entered into a credit agreement with several financial institutions as lenders and JPMorgan Chase Bank, N.A. as administrative agent, which provides us with a senior secured credit facility (the "Revolving Credit Facility") with an aggregate borrowing capacity of $1.0 billion. Borrowings under the Revolving Credit Facility bear interest at a rate per annum equal to, at our option, (i) the Term Secured Overnight Financing Rate ("Term SOFR"), plus a credit spread of 0.10%, plus a margin that ranges from 1.25% to 2.25% or (ii) an alternate base rate as defined in the credit agreement, plus a margin that ranges from 0.25% to 1.25%. The margins under the Revolving Credit Facility are based on the Company's net leverage ratio or, if the Company elects to switch to a credit ratings-based system after the investment grade ratings trigger date occurs (as defined in the credit agreement), margins are based on the Company's public debt rating.

In addition to paying interest on outstanding principal under the Revolving Credit Facility, we are required to pay an unused commitment fee that ranges from 0.125% to 0.375% per annum, based on the same factors discussed above and the daily unused commitments under the facility. We are also required to pay (i) a letter of credit fee based on the applicable margin for Term SOFR loans on the face amount of each letter of credit, (ii) a letter of credit fronting fee as agreed by the Company and such issuing lender, and (iii) other customary letter of credit fees. Our Revolving Credit Facility matures in June 2028.

As of September 30, 2023, we had no borrowings or letters of credit under our Revolving Credit Facility. Loans and letters of credit issued under the Revolving Credit Facility are secured by liens on substantially all of the Company's tangible and intangible assets.

India Credit Facility

In July 2022, FS India Solar Ventures Private Limited, our indirect wholly-owned subsidiary, entered into a finance agreement (the "India Credit Facility") with the U.S. International Development Finance Corporation ("DFC") for aggregate borrowings of up to $500.0 million for the development and construction of a solar module manufacturing facility in India. Principal on the India Credit Facility is payable in scheduled semi-annual installments beginning in the second half of 2024 through the facility's expected maturity in August 2029. The India Credit Facility is guaranteed by First Solar, Inc.

Interest Rate Risk

As of September 30, 2023, our long-term debt borrowing rates were as follows:

Loan Agreement	Interest Rate	Effective Interest Rate
India Credit Facility	U.S. Treasury Constant Maturity Yield plus 1.75%	5.80%

Future Principal Payments

At September 30, 2023, the future principal payments on our long-term debt were due as follows (in thousands):

	Total Debt
Remainder of 2023	$ —
2024	35,450
2025	90,900
2026	90,900
2027	90,950
2028	91,000
Thereafter	100,800
Total long-term debt future principal payments	$ 500,000

12. Commitments and Contingencies

Commercial Commitments

During the normal course of business, we enter into commercial commitments in the form of letters of credit and surety bonds to provide financial and performance assurance to third parties. As of September 30, 2023, the issued and outstanding amounts and available capacities under these commitments were as follows (in millions):

	Issued and Outstanding	Available Capacity
Revolving Credit Facility (1)	$ —	$ 250.0
Bilateral facilities (2)	126.2	118.9
Surety bonds	21.6	232.0

(1) Our Revolving Credit Facility provides us with a sub-limit of $250.0 million to issue letters of credit, at a fee based on the applicable margin for Term SOFR loans, a fronting fee, and other customary letter of credit fees.

(2) Of the total letters of credit issued under the bilateral facilities, $8.9 million was secured with cash.

Product Warranties

When we recognize revenue for sales of modules or projects, we accrue liabilities for the estimated future costs of meeting our limited warranty obligations for both modules and the balance of the systems. We estimate our limited product warranty liability for power output and defects in materials and workmanship under normal use and service conditions based on return rates for each series of module technology. We make and revise these estimates based primarily on the number of solar modules under warranty installed at customer locations, our historical experience with and projections of warranty claims, and our estimated per-module replacement costs. We also monitor our expected future module performance through certain quality and reliability testing and actual performance in certain field installation sites. From time to time, we have taken remediation actions with respect to affected modules beyond our limited warranties and may elect to do so in the future, in which case we would incur additional expenses. Such potential voluntary future remediation actions beyond our limited warranty obligations may be material to our 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, 2023 and 2022 were as follows (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2023	2022	2023	2022
Product warranty liability, beginning of period	$ 31,969	$ 47,129	$ 33,787	$ 52,553
Accruals for new warranties issued	1,310	1,376	3,155	3,649
Settlements	(1,326)	(3,160)	(4,519)	(10,414)
Changes in estimate of product warranty liability	(5,806)	(10,360)	(6,276)	(10,803)
Product warranty liability, end of period	$ 26,147	$ 34,985	$ 26,147	$ 34,985
Current portion of warranty liability	$ 7,647	$ 11,039	$ 7,647	$ 11,039
Noncurrent portion of warranty liability	$ 18,500	$ 23,946	$ 18,500	$ 23,946

We estimate our limited product warranty liability for power output and defects in materials and workmanship under normal use and service conditions based on return rates for each series of module technology. During the three months ended September 30, 2023, we revised this estimate based on updated information regarding our warranty claims, which reduced our product warranty liability by $5.7 million. This updated information reflected lower-than-expected warranty claims for our older series of module technology and revisions to projected settlements, resulting in reductions to our projected module return rate. During the three months ended September 30, 2022, we revised the estimate based on updated information regarding our warranty claims, which reduced our product warranty liability by $10.2 million. This updated information reflected lower-than-expected warranty claims for our older series of module technology as well as the evolving claims profile of our newest series of module technology, resulting in reductions to our projected module return rates.

Contingent Consideration

As part of our Evolar acquisition, we agreed to pay additional consideration of up to $42.5 million to the selling shareholders contingent upon the successful achievement of certain technical milestones. See Note 2. "Business Acquisitions" to our condensed consolidated financial statements for further discussion of this acquisition. As of September 30, 2023, we recorded $7.5 million of current liabilities and $11.0 million of long-term liabilities for such contingent obligations based on their estimated fair values.

Solar Module Collection and Recycling Liability

We previously established a module collection and recycling program, which has since been discontinued, to collect and recycle modules sold and covered under such program once the modules reach the end of their service lives. For legacy customer sales contracts that are covered under this program, we agreed to pay the costs for the collection and recycling of qualifying solar modules, and the end-users agreed to notify us, disassemble their solar power systems, package the solar modules for shipment, and revert ownership rights over the modules back to us at the end of the modules' service lives. Accordingly, we recorded any collection and recycling obligations within "Cost of sales" at the time of sale based on the estimated cost to collect and recycle the covered solar modules.

We estimate the cost of our collection and recycling obligations based on the present value of the expected 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; and by-product credits for certain materials recovered during the recycling process. We base these estimates on our experience collecting and recycling solar modules and certain assumptions regarding costs at the time the solar modules will be collected and recycled. In the periods between the time of sale and the related settlement of the collection and recycling obligation, we accrete the carrying amount of the associated liability and classify the corresponding 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, 2022, we completed our annual cost study of obligations under our module collection and recycling program and reduced the associated liability by $7.5 million primarily due to lower estimated capital and chemical costs resulting from improvements to our module recycling technology.

Our module collection and recycling liability was $130.1 million and $128.1 million as of September 30, 2023 and December 31, 2022, respectively. See Note 5. “Restricted Marketable Securities” to our condensed consolidated financial statements for more information about our arrangements for funding this liability.

Legal Proceedings

Class Action

In January 2022, a putative class action lawsuit titled City of Pontiac General Employees’ Retirement System v. First Solar, Inc., et al., Case No. 2:22-cv-00036-MTL, 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 officers (collectively, “Putative Class Action Defendants”). The complaint was filed on behalf of a purported class consisting of all purchasers of First Solar common stock between February 22, 2019 and February 20, 2020, inclusive. The complaint asserts violations of Sections 10(b) and 20(a) of the Securities Exchange Act of 1934 and Rule 10b-5 based on allegedly false and misleading statements related to the Company’s Series 6 solar modules and its project development business. It seeks unspecified damages and an award of costs and expenses. On April 25, 2022, the Arizona District Court issued an order appointing the Palm Harbor Special Fire Control & Rescue District Firefighters’ Pension Plan and the Greater Pennsylvania Carpenters’ Pension Fund as Lead Plaintiffs. On June 23, 2022, Lead Plaintiffs filed an Amended Complaint that brought the same claims and sought the same relief as the original complaint. On January 10, 2023, the Court granted the Putative Class Action Defendants’ motion to dismiss in full, with leave to amend by February 10, 2023. On February 10, 2023, Lead Plaintiffs filed a Second Amended Complaint. Putative Class Action Defendants filed a motion to dismiss the Second Amended Complaint on February 24, 2023. Lead Plaintiffs filed their opposition to the motion to dismiss on March 10, 2023, and Putative Class Action Defendants filed a reply in support of their motion to dismiss on March 17, 2023. On June 23, 2023, the Court granted the Putative Class Action Defendants’ motion to dismiss with prejudice. On July 14, 2023, the Clerk of Court entered judgment in favor of the Putative Class Action Defendants. Lead Plaintiffs did not file an appeal, and the judgment in favor of the Putative Class Action Defendants is now final.

Derivative Action

In September 2022, a derivative action titled Federman v. Widmar, et al., Case No. 2:22-cv-01541-JAT, was filed by a putative stockholder purportedly on behalf of the Company in the Arizona District Court against our current directors and certain officers of the Company (collectively, “Derivative Action Defendants”), alleging violations of Section 14(a) of the Securities Exchange Act of 1934, breach of fiduciary duties, contribution and indemnification, aiding and abetting, and gross mismanagement. The complaint generally alleges that the Derivative Action Defendants caused or allowed false and misleading statements to be made concerning the Company’s Series 6 modules and project development business. The action includes claims for, among other things, damages in favor of the Company and an award of costs and expenses to the putative plaintiff stockholder, including attorneys’ fees. The Company believes that the plaintiff in the derivative action lacks standing to pursue litigation on behalf of First Solar. On February 17, 2023, the case was transferred to Judge Liburdi, who is also presiding over the related putative class action. On March 10, 2023, the plaintiff filed an Amended Complaint. On April 10, 2023, the Derivative Action Defendants filed a motion to dismiss the Amended Complaint. The plaintiff filed its opposition to the motion to dismiss on May 17, 2023, and the Derivative Action Defendants filed a reply in support of their motion to dismiss on June 17, 2023. Given the Court’s dismissal of the putative class action, the parties agreed that the claims in the Derivative Action should be dismissed with prejudice and filed a joint stipulation to that effect on September 7, 2023. On September 8, 2023, the Court ordered the Clerk of Court to dismiss the action with prejudice.

Other Matters and Claims

In July 2021, Southern Power Company and certain of its affiliates (“Southern”) filed an arbitration demand with the American Arbitration Association against two subsidiaries of the Company, alleging breach of the engineering, procurement, and construction (“EPC”) agreements for five projects in the United States, for which the Company’s subsidiaries served as the EPC contractor. The arbitration demand asserts breach of obligations to design and engineer the projects in accordance with the EPC agreements, particularly as such obligations relate to the procurement of tracker systems and inverters. The Company and its subsidiaries denied the claims, and defended the claims in arbitration hearings, which concluded in February 2023. In May 2023, the parties submitted their final proposals of individual award claims to the arbitration panel. On July 19, 2023, the arbitration panel entered an interim award to Southern for $35.6 million. As a result, we accrued a loss for such interim award in our results of operations for the nine months ended September 30, 2023. Such amount was paid during the three months ended September 30, 2023. The interim award permitted the parties to raise additional issues with the arbitration panel, and Southern moved for pre- and post-judgment interest and a limited claim for attorneys’ fees. In orders dated October 13, 2023 and October 16, 2023, the arbitration panel denied Southern’s motion for interest and attorney’s fees, respectively. Because all post-award motions have been resolved, the award will become final. The Company believes that the deadline to appeal the interim award judgment will expire no earlier than December 17, 2023.

During the year ended December 31, 2022, we received several indemnification demands from certain customers, for whom we provided EPC services, regarding claims that such customers’ PV tracker systems infringe, in part, on patents owned by Rovshan Sade (“Sade”), the owner of a company called Trabant Solar, Inc. In January 2023, we were notified by two of our customers that Sade served them with patent infringement complaints, and we have assumed the defense of these claims. We have conducted due diligence on the patents and claims and believe that we will prevail in the actions. In April 2023, we commenced an Inter Partes Review (“IPR”) before the United States Patent and Trademark Office seeking to invalidate such claims. Based upon that filing, we have also sought to stay the litigation proceedings pending the IPR process. One such action has been formally stayed pending the IPR outcome. There has been no action in the second proceeding, and unless plaintiff or the court order the parties to proceed, First Solar will not seek a stay prior to the IPR decision. The decision whether to allow the IPR to proceed is expected in November 2023. Given the early stage of the litigation, at this time we are not in a position to assess the likelihood of any potential loss or adverse effect on our financial condition or to estimate the amount or range of possible loss, if any, from these actions.

In April 2019, a subcontractor of First Solar sustained certain injuries while performing work at a former project site and, in May 2019, commenced legal action against a subsidiary of the Company. In June 2023, a jury awarded damages of approximately $51.3 million to the plaintiff. On September 21, 2023, the Superior Court of California for Monterey County ruled, in response to a motion for remittitur filed by the Company, that the damages awarded to the plaintiff were excessive and reduced the award from $51.3 million to $21.8 million. Accordingly, as of September 30, 2023, we recorded a $21.8 million accrued litigation payable included in “Other current liabilities” in our condensed consolidated balance sheet. We believe the full amount of awarded damages will be covered by our various insurance policies. Accordingly, we also recorded a $21.8 million receivable included in “Other current assets” in our condensed consolidated balance sheet as of September 30, 2023. The plaintiff did not accept the reduced award by the court ordered deadline of October 10, 2023, and, as a result, the $21.8 million award has been vacated and a new trial will be scheduled. We, in conjunction with our insurance carriers, are exploring challenges to the verdict in an appellate court.

On September 29, 2023, the Company received a subpoena from the Division of Enforcement of the SEC seeking documents and information since 2019 relating to the Company’s operations in India, the Company's entry into a PV module supply agreement with an India-based customer, and certain aspects of the Company's technology roadmap, among other things. The Company is cooperating with the SEC and cannot predict the ultimate timing, scope, or outcome of this matter.

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

13. Revenue from Contracts with Customers

The following table presents the disaggregation of revenue from contracts with customers for the three and nine months ended September 30, 2023 and 2022 along with the reportable segment for each category (in thousands):

		Three Months Ended September 30,		Nine Months Ended September 30,	
Category	**Segment**	**2023**	**2022**	**2023**	**2022**
Solar modules	Modules	$ 800,393	$ 619,922	$ 2,139,220	$ 1,582,248
Solar power systems	Other	217	90	19,474	2,433
O&M services	Other	481	3,481	1,374	11,558
Energy generation	Other	(1)	5,440	(19)	20,689
Net sales		$ 801,090	$ 628,933	$ 2,160,049	$ 1,616,928

We recognize revenue for module sales at a point in time following the transfer of control of the modules to the customer, which typically occurs upon shipment or delivery depending on the terms of the underlying contracts. Such contracts may contain provisions that require us to make liquidated damage payments to the customer if we fail to ship or deliver modules by scheduled dates. For certain contracts, we may also be required to make liquidated damage payments if we fail to deliver modules that meet certain U.S. domestic content requirements. We recognize these liquidated damages as a reduction of revenue in the period we transfer control of the modules to the customer.

We recognize revenue for sales of development projects or completed systems when we enter into the associated sales contract. For certain prior project sales, such revenue included estimated amounts of variable consideration. These estimates may require significant judgment to determine the most likely amount of net contract revenues. The cumulative effect of revisions to estimates is recorded in the period in which the revisions are identified and the amounts can be reasonably estimated. During the nine months ended September 30, 2023 revenue increased $12.3 million due to adjustments to the estimated transaction prices for certain projects we previously sold, which represented 3.1% of the aggregate revenue for such projects.

The following table reflects the changes in our contract assets, which we classify as "Accounts receivable unbilled, net" and our contract liabilities, which we classify as "Deferred revenue," for the nine months ended September 30, 2023 (in thousands):

	September 30, 2023	December 31, 2022	Nine Month Change	
Accounts receivable unbilled, net (1)	$ 38,294	$ 42,152	$ (3,858)	(9)%
Deferred revenue	$ 1,721,769	$ 1,207,940	$ 513,829	43 %

(1) Includes $4.7 million and $11.5 million of noncurrent accounts receivable unbilled, net classified as "Other assets" on our condensed consolidated balance sheets as of September 30, 2023 and December 31, 2022, respectively.

During the nine months ended September 30, 2023, our contract assets decreased by $3.9 million primarily due to billings for certain prior project sales, partially offset by unbilled receivables associated with variable consideration related to certain prior project sales. During the nine months ended September 30, 2023, our contract liabilities increased by $513.8 million primarily due to advance payments received for sales of solar modules in the current period, partially offset by the recognition of revenue for sales of solar modules for which payment was received in prior years. During the nine months ended September 30, 2023 and 2022, we recognized revenue of $320.3 million and $186.2 million, respectively, that was included in the corresponding contract liability balance at the beginning of the periods.

As of September 30, 2023, we had entered into contracts with customers for the future sale of 77.6 GW of solar modules for an aggregate transaction price of $23.0 billion, which we expect to recognize as revenue through 2030 as we transfer control of the modules to the customers. Such aggregate transaction price excludes estimates of variable consideration associated with (i) future module technology improvements, including enhancements to certain energy related attributes, (ii) sales freight in excess of a defined threshold, (iii) changes to certain commodity prices, and (iv) the module wattage committed for delivery, among other things. As a result, the revenue recognized from such contracts may increase or decrease in future periods relative to the original transaction price. These contracts may also be subject to amendments as agreed to by the parties to the contract. These amendments may increase or decrease the volume of modules to be sold under the contract, change delivery schedules, or otherwise adjust the expected revenue under these contracts.

14. Share-Based Compensation

The following table presents share-based compensation expense recognized in our condensed consolidated statements of operations for the three and nine months ended September 30, 2023 and 2022 (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2023	2022	2023	2022
Cost of sales	$ 1,238	$ 1,044	$ 3,513	$ 1,988
Selling, general and administrative	5,905	9,572	16,668	16,900
Research and development	1,047	1,227	2,959	2,219
Production start-up	8	11	69	14
Total share-based compensation expense	$ 8,198	$ 11,854	$ 23,209	$ 21,121

As of September 30, 2023, we had $40.1 million of unrecognized share-based compensation expense related to unvested restricted stock and performance units, which we expect to recognize over a weighted-average period of approximately 1.4 years.

In March 2020, the compensation committee of our board of directors approved grants of performance units (“PUs”) for key executive officers to be earned over a multi-year performance period, which ended in December 2022. Vesting of the 2020 grants of PUs was contingent upon the relative attainment of target contracted revenue, module wattage, and return on capital metrics. In March 2023, the compensation committee certified the achievement of the vesting conditions applicable to the grants, which approximated the target level of performance. Accordingly, each participant received one share of common stock for each vested PU granted, net of any tax withholdings.

In May 2021, the compensation committee approved additional grants of PUs for key executive officers. Such grants are expected to be earned over a multi-year performance period ending in December 2023. Vesting of the 2021 grants of PUs is contingent upon the relative attainment of target contracted revenue, cost per watt, incremental average selling price, and operating income metrics.

In March 2022, the compensation committee approved additional grants of PUs for key executive officers. Such grants are expected to be earned over a multi-year performance period ending in December 2024. Vesting of the 2022 grants of PUs is contingent upon the relative attainment of target contracted revenue, cost per watt, and return on capital metrics.

In March 2023, the compensation committee approved additional grants of PUs for key executive officers. Such grants are expected to be earned over a multi-year performance period ending in December 2025. Vesting of the 2023 grants of PUs is contingent upon the relative attainment of target contracted revenue, production, and operating margin metrics.

Vesting of PUs is also contingent upon the employment of program participants through the applicable vesting dates, with limited exceptions in case of death, disability, a qualifying retirement, or a change-in-control of First Solar. Outstanding PUs are included in the computation of diluted net income per share based on the number of shares that would be issuable if the end of the reporting period were the end of the contingency period.

15. Income Taxes

In August 2022, the U.S. President signed into law the IRA, which revised U.S. tax law by, among other things, including a new corporate alternative minimum tax of 15% on certain large corporations, imposing a 1% excise tax on stock buybacks, and providing various incentives to address climate change, including the introduction of the advanced manufacturing production credit. The provisions of the IRA are generally effective for tax years beginning after 2022. Given the complexities of the IRA, which is pending technical guidance and regulations from the Internal Revenue Service ("IRS") and U.S. Treasury Department, we will continue to monitor these developments and evaluate the potential future impact to our results of operations.

In November 2022, the U.S. Treasury Department released proposed foreign tax credit ("FTC") regulations addressing various aspects of the U.S. FTC regime. Among other items, these proposed regulations provide certain exceptions for determining creditable foreign withholding taxes. Taxpayers may rely on these proposed regulations, which apply to tax years beginning on or after December 28, 2021. As a result of these proposed regulations, foreign withholding taxes will continue to be creditable. In July 2023, the U.S. Treasury Department issued Notice 2023-55, which provides temporary relief for taxpayers in determining whether a foreign tax is eligible for a foreign tax credit for taxable years beginning on or after December 28, 2021, and ending before December 31, 2023.

Our effective tax rate was 6.4% and 341.4% for the nine months ended September 30, 2023 and 2022, respectively. The decrease in our effective tax rate was primarily driven by the relative size of our pretax income in the prior period, higher prior period losses in certain jurisdictions for which no tax benefit could be recorded, the effect of the advanced manufacturing production credit described in Note 7. "Government Grants" to our condensed consolidated financial statements, a discrete tax expense in the prior period associated with the remeasurement of our net deferred tax assets in Vietnam, and the effect of tax law changes associated with the proposed FTC regulations described above. Our provision for income taxes differed from the amount computed by applying the U.S. statutory federal income tax rate of 21% primarily due to the effect of tax law changes associated with the IRA described above and excess tax benefits associated with share-based compensation.

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 certain employment and investment thresholds, which we are currently in compliance with and expect to continue to comply with through the expiration of the tax holiday in 2027.

Our Vietnamese subsidiary had previously been granted a tax incentive that provided a two-year tax exemption, which began in 2020, and reduced annual tax rates through the end of 2025. In May 2022, our Vietnamese subsidiary was granted a new long-term tax incentive that provides an additional two-year tax exemption through 2023, followed by reduced annual tax rates of 5% through 2032 and 10% through 2036. Such long-term tax incentive is conditional upon our continued compliance with certain revenue and R&D spending thresholds, which we are currently in compliance with and expect to continue to comply with through the expiration of the tax holiday.

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

16. Net Income (Loss) per Share

The calculation of basic and diluted net income (loss) per share for the three and nine months ended September 30, 2023 and 2022 was as follows (in thousands, except per share amounts):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2023	2022	2023	2022
Basic net income (loss) per share				
Numerator:				
Net income (loss)	$ 268,398	$ (49,168)	$ 481,538	$ (36,618)
Denominator:				
Weighted-average common shares outstanding	106,834	106,596	106,795	106,532
Diluted net income (loss) per share				
Denominator:				
Weighted-average common shares outstanding	106,834	106,596	106,795	106,532
Effect of restricted stock and performance units	664	—	531	—
Weighted-average shares used in computing diluted net income (loss) per share	107,498	106,596	107,326	106,532
Net income (loss) per share:				
Basic	$ 2.51	$ (0.46)	$ 4.51	$ (0.34)
Diluted	$ 2.50	$ (0.46)	$ 4.49	$ (0.34)

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, 2023 and 2022 as such shares would have had an anti-dilutive effect (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2023	2022	2023	2022
Anti-dilutive shares	—	626	—	523

17. Accumulated Other Comprehensive Loss

The following table presents the changes in accumulated other comprehensive loss, net of tax, for the nine months ended September 30, 2023 (in thousands):

	Foreign Currency Translation Adjustment	Unrealized (Loss) Gain on Marketable Securities and Restricted Marketable Securities	Unrealized (Loss) Gain on Derivative Instruments	Total
Balance as of December 31, 2022	$ (121,473)	$ (64,780)	$ (5,564)	$ (191,817)
Other comprehensive (loss) income before reclassifications	(8,504)	(3,077)	(962)	(12,543)
Amounts reclassified from accumulated other comprehensive loss	869	9	5,576	6,454
Net tax effect	—	23	(1,087)	(1,064)
Net other comprehensive (loss) income	(7,635)	(3,045)	3,527	(7,153)
Balance as of September 30, 2023	$ (129,108)	$ (67,825)	$ (2,037)	$ (198,970)

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, 2023 and 2022 (in thousands):

		Three Months Ended September 30,		Nine Months Ended September 30,	
Comprehensive Income Components	Income Statement Line Item	2023	2022	2023	2022
Foreign currency translation adjustment:					
Foreign currency translation adjustment	Cost of sales	$ —	$ —	$ 146	$ —
Foreign currency translation adjustment	Gain on sales of businesses, net	—	—	—	3,756
Foreign currency translation adjustment	Other (expense) income, net	(1,005)	403	(1,015)	556
Total foreign currency translation adjustment		(1,005)	403	(869)	4,312
Unrealized loss on marketable securities and restricted marketable securities	Other (expense) income, net	—	—	(9)	—
Unrealized (loss) gain on derivative contracts:					
Foreign exchange forward contracts	Cost of sales	—	218	—	1,671
Commodity swap contracts	Cost of sales	(911)	—	(5,576)	—
Total unrealized (loss) gain on derivative contracts		(911)	218	(5,576)	1,671
Total (loss) gain reclassified		$ (1,916)	$ 621	$ (6,454)	$ 5,983

18. Segment Reporting

Our primary segment is our modules business, which involves the design, manufacture, and sale of cadmium telluride ("CdTe") solar modules, which convert sunlight into electricity. Third-party customers of our modules segment include developers and operators of systems, utilities, independent power producers, commercial and industrial companies, and other system owners. Our residual business operations include certain project development activities, O&M services, the results of operations from PV solar power systems we owned and operated in certain international regions, and the sale of such systems to third-party customers.

See Note 19. "Segment and Geographical Information" in our Annual Report on Form 10-K for the year ended December 31, 2022 for additional discussion of our segment reporting.

The following tables provide a reconciliation of certain financial information for our reportable segment to information presented in our condensed consolidated financial statements for the three and nine months ended September 30, 2023 and 2022 and as of September 30, 2023 and December 31, 2022 (in thousands):

	Three Months Ended September 30, 2023			Three Months Ended September 30, 2022		
	Modules	Other	Total	Modules	Other	Total
Net sales	$ 800,393	$ 697	$ 801,090	$ 619,922	$ 9,011	$ 628,933
Gross profit (loss)	367,359	8,816	376,175	24,040	(3,058)	20,982
Depreciation and amortization expense	76,991	2	76,993	58,287	2,075	60,362

	Nine Months Ended September 30, 2023			Nine Months Ended September 30, 2022		
	Modules	Other	Total	Modules	Other	Total
Net sales	$ 2,139,220	$ 20,829	$ 2,160,049	$ 1,582,248	$ 34,680	$ 1,616,928
Gross profit (loss)	776,170	22,476	798,646	66,396	(57,151)	9,245
Depreciation and amortization expense	211,161	6	211,167	172,296	7,276	179,572

	September 30, 2023			December 31, 2022		
	Modules	Other	Total	Modules	Other	Total
Goodwill	$ 28,473	$ —	$ 28,473	$ 14,462	$ —	$ 14,462

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; 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, module volumes produced, module volumes sold, revenues, gross margin, operating expenses, products, projected costs (including estimated future module collection and recycling costs), warranties, solar module technology and cost reduction roadmaps, restructuring, product reliability, investments, and capital expenditures; our ability to continue to reduce the cost per watt of our solar modules; the impact of public policies; the potential impact of legislation intended to encourage renewable energy investments through tax credits; our ability to expand manufacturing capacity worldwide, including our plans to construct new manufacturing facilities in the United States and related increase in manufacturing capacity; the impact of supply chain disruptions, which may affect the procurement of raw materials used in our manufacturing process and the distribution of our modules; R&D programs and our ability to improve the wattage of our solar modules; sales and marketing initiatives; and competition. In some cases, you can identify these statements by forward-looking words, such as "estimate," "expect," "anticipate," "project," "plan," "intend," "seek," "believe," "forecast," "foresee," "likely," "may," "should," "goal," "target," "might," "will," "could," "predict," "continue," "contingent," 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 and therefore speak only as of the filing date. You should not place undue reliance on these forward-looking statements. We undertake no obligation to update any of these forward-looking statements for any reason, whether as a result of new information, future developments, or otherwise. These forward-looking statements involve known and unknown risks, uncertainties, and other factors that may cause our actual results, levels of activity, performance, or achievements to differ materially from those expressed or implied by these statements. These factors include, but are not limited to:

- structural imbalances in global supply and demand for PV solar modules;
- the market for renewable energy, including solar energy;
- our competitive position and other key competitive factors;
- the reduction, elimination, or expiration of government subsidies, policies, and support programs for solar energy projects and other renewable energy projects;
- the impact of public policies, such as tariffs or other trade remedies imposed on solar cells and modules;
- the passage of legislation intended to encourage renewable energy investments through tax credits, such as the IRA;
- our ability to execute on our long-term strategic plans, including our ability to secure financing;
- our ability to execute on our solar module technology and cost reduction roadmaps;

- our ability to incorporate technology improvements into our manufacturing process, including the implementation of our Copper Replacement ("CuRe") program and the production of bifacial solar modules;
- our ability to avoid manufacturing interruptions, including during the ramp of our Series 7 modules manufacturing facilities;
- our ability to improve the wattage of our solar modules;
- interest rate fluctuations and our customers' ability to secure financing;
- the loss of any of our large customers, or the ability of our customers and counterparties to perform under their contracts with us;
- the severity and duration of public health threats (including pandemics such as COVID-19), including its potential impact on the Company's business, financial condition, and results of operations;
- the satisfaction of conditions precedent in our sales agreements;
- our ability to attract new customers and to develop and maintain existing customer and supplier relationships;
- our ability to construct new production facilities to support new product lines;
- general economic and business conditions, including those influenced by U.S., international, and geopolitical events;
- environmental responsibility, including with respect to CdTe and other semiconductor materials;
- claims under our limited warranty obligations;
- changes in, or the failure to comply with, government regulations and environmental, health, and safety requirements;
- effects arising from and results of pending litigation;
- future collection and recycling costs for solar modules covered by our module collection and recycling program;
- supply chain disruptions, including demurrage and detention charges;
- our ability to protect our intellectual property;
- our ability to prevent and/or minimize the impact of cyber-attacks or other breaches of our information systems;
- our continued investment in R&D;
- the supply and price of components and raw materials, including CdTe;
- our ability to attract and retain key executive officers and associates; and

- all other matters discussed in Item 1A. "Risk Factors" of our Annual Report on Form 10-K for the year ended December 31, 2022, elsewhere in this Quarterly Report on Form 10-Q, and our other reports filed with the SEC.

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

Executive Overview

We are a leading American solar technology company and global provider of PV solar energy solutions. Developed at our R&D labs in California and Ohio, we manufacture and sell PV solar modules with an advanced thin film semiconductor technology that provide a high-performance, lower-carbon alternative to conventional crystalline silicon PV solar modules. From raw material sourcing through end-of-life module recycling, we are committed to reducing the environmental impacts and enhancing the social and economic benefits of our products across their life cycle. We are the world's largest thin film PV solar module manufacturer and the largest PV solar module manufacturer in the Western Hemisphere.

Certain of our financial results and other key operational developments for the three months ended September 30, 2023 include the following:

- Net sales for the three months ended September 30, 2023 increased by 27% to $801.1 million compared to $628.9 million for the same period in 2022. The increase was primarily driven by an increase in the volume of modules sold to third parties and an increase in the average selling price per watt of our modules.

- Gross profit as a percentage of net sales for the three months ended September 30, 2023 increased 43.7 percentage points to 47.0% from 3.3% for the same period in 2022. The increase in gross profit was primarily due to the recognition of the advanced manufacturing production credit under Section 45X of the IRC, reductions in sales freight costs, and a higher average selling price per watt for modules sold in the current period.

- During the three months ended September 30, 2023, we commenced production of Series 7 modules at our first manufacturing facility in India, bringing our total installed nameplate production capacity across all our facilities to approximately 16.5 GW. During the three months ended September 30, 2023, we produced 3.2 GW and sold 2.7 GW of solar modules. During 2023, we expect to produce between 11.7 GW and 12.1 GW and sell between 11.8 GW and 12.3 GW of solar modules.

- In July 2023 we announced plans to expand our manufacturing capacity by an additional 3.5 GW by constructing our fifth manufacturing facility in the United States. This facility, which will be located in Iberia Parish, Louisiana, is expected to commence operations in late 2025. Such expansion plans, in combination with our previously announced expansion plans, are expected to increase our manufacturing capacity by approximately 7.9 GW by 2026. This expansion, together with other initiatives to enhance our manufacturing throughput, is expected to increase our total installed nameplate capacity to approximately 25 GW by 2026.

Market Overview

Solar energy is one of the fastest growing forms of renewable energy with numerous economic and environmental benefits that make it an attractive complement to and/or substitute for traditional forms of energy generation. In recent years, the cost of producing electricity from PV solar power systems has decreased to levels that are competitive with or below the wholesale price of electricity in many markets. This price decline has opened new possibilities to develop systems in many locations with limited or no financial incentives, thereby promoting the widespread adoption of solar energy. Other technological developments in the industry, such as the advancement of energy storage capabilities, have further enhanced the prospects of solar energy as an alternative to traditional forms of energy generation. In addition to these economic benefits, solar energy has substantial environmental benefits. For example, PV solar power systems generate no greenhouse gas or other emissions and use minimal amounts of water compared to traditional energy generation assets. As a result of these and other factors, worldwide solar markets continue to develop and expand.

Recently enacted government support programs, such as the IRA, have contributed and are expected to continue to contribute to this momentum by providing solar module manufacturers, project developers, and project owners with certain subsidies and tax incentives to accelerate the ongoing transition to clean energy. Among other things, the IRA (i) reinstates the 30% investment tax credit for qualifying solar projects that meet certain wage and apprenticeship requirements, (ii) extends the production tax credit to include energy generated from solar projects, (iii) provides incremental investment and production tax credits for solar projects that meet certain domestic content and location requirements, and (iv) offers tax credits for solar modules and solar module components manufactured in the United States and sold to third parties. From time to time, certain state and local governments may offer support programs to incentivize the purchase of solar module manufacturing equipment and the hiring and training of manufacturing personnel.

Supply and demand. As a result of the market opportunities and increased demand described above, we are in the process of expanding our manufacturing capacity by approximately 7.9 GW, including the construction of our fourth manufacturing facility in the United States, which is expected to commence operations in the second half of 2024; our fifth manufacturing facility in the United States, which is expected to commence operations in late 2025; and the expansion of our manufacturing footprint at our existing facilities in Ohio, which is expected to be completed in the first half of 2024. We continue to evaluate opportunities for future expansion, particularly within the United States. In the aggregate, we believe manufacturers of solar cells and modules, particularly those in China, have significant installed production capacity, relative to global demand, and the ability for additional capacity expansion. Accordingly, we believe the solar industry may experience periods of structural imbalance between supply and demand, which could lead to periods of pricing volatility. In light of these market realities, we continue to focus on our strategies and points of differentiation, which include our advanced module technology, our manufacturing process and distributed manufacturing presence, our R&D capabilities, the sustainability advantage of our modules, and our financial stability. As a result of this focus, we recently commenced production of Series 7 modules at our third manufacturing facility in Ohio and our first manufacturing facility in India.

Pricing competition. The solar industry has been characterized by intense pricing competition, both at the module and system levels. This competition may result in an environment in which pricing falls rapidly, which could potentially increase demand for solar energy solutions but constrain the ability for project developers and module manufacturers to sustain meaningful and consistent profitability. Our results of operations could be adversely affected if competitors reduce pricing below their costs, bid aggressively low prices for module sale agreements, or are able to operate at minimal or negative operating margins for sustained periods of time. For certain of our competitors, including many in China, these practices may be enabled by their direct or indirect access to sovereign capital or other forms of state support. Although module average selling prices in many global markets have generally declined for several years, module spot pricing in the United States, our primary market, remains elevated primarily due to the rising demand for domestically manufactured modules as a result of the IRA. The duration of this elevated period of pricing is uncertain.

Diverse offerings. We face intense competition from manufacturers of crystalline silicon solar modules and other emerging technologies. Solar module manufacturers compete with one another on sales price per watt, which may be influenced by several module value attributes, including energy yield, wattage (through a larger form factor or an improved conversion efficiency), degradation, sustainability, and reliability. Sales price per watt may also be influenced by warranty terms and customer payment terms. We believe that utility-scale solar will continue to be a compelling offering and will continue to represent an increasing portion of the overall electricity generation mix. However, this focus on utility-scale module offerings exists within a current market environment that includes rooftop and distributed generation solar, which may influence our future offerings.

We continue to devote significant resources to support the implementation of our technology roadmap and improve the energy output of our modules. In the course of our R&D activities, we explore various technologies in our efforts to sustain competitive differentiation of our modules. Such technologies include the development of bifacial modules, the implementation of our CuRe program, and ongoing research and development of multi-junction solar modules.

- *Bifacial*. While conventional solar modules are monofacial, meaning their ability to produce energy is a function of direct and diffuse irradiance on their front side, most module manufacturers offer bifacial modules that also capture diffuse irradiance on the back side of a module. Bifaciality compromises nameplate efficiency, but by converting both front and rear side irradiance, such technology may improve the overall energy production of a module relative to nameplate efficiency in certain applications, which could potentially lower the overall levelized cost of electricity ("LCOE") of a system when compared to systems using monofacial solar modules. We recently manufactured a limited production run of our first bifacial solar module utilizing a thin film semiconductor, which is undergoing field and laboratory testing. Such bifacial module features an innovative transparent back contact which, in addition to converting both front and rear side irradiance, allows infrared light to pass through rather than be absorbed as heat. This design is expected to lower the operational temperature of the module, resulting in a higher energy yield. We currently expect to begin commercial production of bifacial modules in the fourth quarter of 2023.

- *CuRe*. Our CuRe program is intended to improve our current semiconductor structure by replacing copper with certain other elements that are expected to enhance module performance by improving its bifaciality characteristics, lowering its temperature coefficient, and improving its warranted degradation. As a result of these performance improvements, our PV solar modules are expected to produce more energy in real world operating conditions over their estimated useful lives than crystalline silicon modules with the same nameplate capacity. In September 2023, we established a new world record CdTe research cell conversion efficiency of 22.4%, which was based on our CuRe program and certified by the U.S. Department of Energy's National Renewable Energy Laboratory. We currently expect to complete our lead line implementation of CuRe in the second half of 2024.

- *Multi-junction*. We continue to evaluate opportunities to develop and leverage other solar cell technologies in multi-junction applications that combine our thin film PV technology with another high efficiency PV semiconductor, with each layer optimized for a different range of the solar spectrum. We believe such applications, which are expected to utilize at least one thin-film semiconductor, have the potential to enable our module conversion efficiency to reach 28% by 2030. Our recent acquisition of Evolar is expected to accelerate the development of high efficiency multi-junction devices by integrating Evolar's know-how with First Solar's existing R&D capabilities.

Product efficiencies. We believe we are among the lowest cost module manufacturers in the solar industry on a module cost per watt basis, based on publicly available information. This cost competitiveness allows us to compete favorably in markets where pricing for modules and systems is highly competitive. Our cost competitiveness is based in large part on our advanced thin film semiconductor technology, module wattage (or conversion efficiency), proprietary manufacturing process (which enables us to produce a CdTe module in a matter of hours using a continuous and highly automated industrial manufacturing process, as opposed to a batch process), and our focus on operational excellence. In addition, our CdTe modules use approximately 2% to 3% of the amount of semiconductor material that is used to manufacture conventional crystalline silicon solar modules. The cost of polysilicon is a significant driver of the manufacturing cost of crystalline silicon solar modules, and the timing and rate of change in the cost of silicon feedstock and polysilicon could lead to changes in solar module pricing levels. In recent years, polysilicon consumption per cell has been reduced through various initiatives, which have contributed to declines in our relative manufacturing cost competitiveness over conventional crystalline silicon module manufacturers.

Energy performance. In many climates our solar modules provide certain energy production advantages relative to competing crystalline silicon solar modules. For example, our CdTe solar technology provides:

- 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);

- a superior spectral response in humid environments where atmospheric moisture alters the solar spectrum relative to standard test conditions;

- a better partial shading response than competing crystalline silicon technologies, which may experience significantly lower energy generation than CdTe solar modules when partial shading occurs; and

- an immunity to cell cracking and its resulting power output loss, a common failure often observed in crystalline silicon modules caused by poor manufacturing, handling, weather, or other conditions.

In addition to these technological advantages, we also warrant that our solar modules will produce at least 98% of their labeled power output rating during the first year, with the warranty coverage reducing by a degradation factor between 0.3% and 0.5%, depending on the module series, every year thereafter throughout the limited power output warranty period of up to 30 years. As a result of these and other factors, our solar modules can produce more annual energy in real world operating conditions than conventional crystalline silicon modules with the same nameplate capacity.

While our modules 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 further declines in the average selling prices of our modules and additional margin compression. We continue to focus on enhancing the competitiveness of our solar modules through our module technology and cost reduction roadmaps.

Certain Trends and Uncertainties

We believe that our business, financial condition, and results of operations may be favorably or unfavorably impacted by the following trends and uncertainties. See Item 1A. “Risk Factors” of our Annual Report on Form 10-K for the year ended December 31, 2022 for discussions of other risks (the “Risk Factors”) that may affect us.

Our business is evolving worldwide and is shaped by the varying ways in which our offerings can be compelling and economically viable solutions to energy needs in various markets. In addressing electricity demands, we are focused on providing utility-scale module offerings in key geographic markets that we believe have a significant need for mass-scale PV solar electricity, including markets throughout the United States, India, and Europe. We closely evaluate and monitor the appropriate level of resources required to support such markets and their associated sales opportunities. When deployed in utility-scale applications, our modules provide energy at a lower LCOE compared to traditional forms of energy generation, making them an attractive alternative to or replacement for aging fossil fuel-based generation resources. Accordingly, future retirements of aging energy generation resources represent a significant increase in the potential market for solar energy.

Demand for our PV solar module offerings depends, in part, on market factors outside our control. For example, many governments have proposed or enacted policies or support programs intended to encourage renewable energy investments to achieve decarbonization objectives and/or establish greater energy independence. While we compete in markets that do not require solar-specific government subsidies or support programs, our net sales and profits remain subject to variability based on the availability and size of government subsidies and economic incentives. Adverse changes in these factors could increase the cost of utility-scale systems, which could reduce demand for our solar modules. Recent developments to government support programs include the following:

- *United States.* In August 2022, the U.S. President signed the IRA into law, which is intended to accelerate the country’s ongoing transition to clean energy. Among other things, the financial incentives provided by the IRA are expected to significantly increase demand for modules manufactured in the United States. Accordingly, the demand for these solar modules is expected to increase domestic manufacturing in the near term, which may result in localized supply chain constraints and periods of inflationary pricing for certain of our key raw materials, including substrate glass and cover glass. The financial incentives provided by the IRA are also expected to significantly increase demand for solar modules in general due to the incremental tax credit available for the qualified production of clean hydrogen that is powered by renewable resources. Several aspects of the IRA are pending technical guidance and regulations from the IRS and U.S. Treasury Department, which earlier this year released a notice of intent to issue proposed regulations for the domestic content bonus tax credit and notices of proposed rulemaking and temporary regulations for the direct payment election and the tax credit transfer election. This initial guidance is subject to revision prior to the publishing of final regulations by the IRS and U.S. Treasury Department. Given the complexities of the IRA, we continue to evaluate the extent of benefits available to us, which we expect will favorably impact our results of operations in future periods. For example, we currently expect to qualify for the advanced manufacturing production credit under Section 45X of the IRC, which provides certain specified benefits for solar modules and solar module components manufactured in the United States and sold to third parties. See Note 7. "Government Grants" to our condensed consolidated financial statements for discussion of our expectation of the financial benefits available to us under the IRA.

- *India*. In March 2023, the government of India allocated financial incentives under the Production Linked Incentive ("PLI") scheme to certain PV module manufacturers, including First Solar. The PLI scheme is expected to provide aggregate funding of INR 185 billion ($2.3 billion), of which INR 11.8 billion ($143 million) was allocated to First Solar, to promote the manufacturing of high efficiency solar modules in India and to reduce India's dependency on foreign imports of solar modules. Under the PLI scheme, manufacturers were selected through a competitive bid process and may be entitled to receive certain cash incentives over a five-year period following the commissioning of their manufacturing facilities. Among other things, such incentives are subject to attaining certain minimum thresholds for module efficiency and temperature coefficient and require that a certain proportion of raw materials be sourced from the domestic market. Such conditions will be evaluated on a quarterly basis from 2026 through 2031. At this time, it is uncertain to what extent we may qualify for such incentives.

Demand for our solar energy solutions also depends on domestic or international trade policies and government regulations, which may be proposed, revised, and/or enacted across short- and long-term time horizons with varying degrees of impact to our net sales, profit, and manufacturing operations. Changes in these policies and regulations could adversely impact the competitive landscape of solar markets, which could reduce demand for our solar modules. Recent revisions or proposed changes to trade policy and government regulations include the following:

- *United States*. In June 2022, the U.S. President authorized the U.S. Secretary of Commerce to provide a 24-month antidumping and countervailing duty ("AD/CVD") tariff exemption for imported solar panels from certain Southeast Asian countries. The U.S. Department of Commerce ("USDOC") previously issued regulations implementing the AD/CVD moratorium in the event that it found circumvention with respect to such Southeast Asian countries. In August 2023, the USDOC issued final affirmative circumvention rulings, finding that solar panels completed in Cambodia, Malaysia, Thailand, and Vietnam using parts and components produced in China circumvent pre-existing AD/CVD orders on China. At this time, it is expected that duties will apply to such solar panels unless they are imported, used, and installed by certain dates in 2024. Our operating results could be adversely impacted if the USDOC and other U.S. Government agencies do not enforce the affirmative circumvention rulings as expected or if pending litigation challenges result in a modification of the rulings. Conversely, effective enforcement could positively impact our operating results.

- *United States*. In October 2023, a coalition of U.S. aluminum extruders and a labor union filed AD/CVD cases on aluminum extrusions from 15 countries. The USDOC has initiated investigations based on the petitions. First Solar imports certain items that appear to be covered by the investigations. Our operating results could be adversely impacted if the USDOC imposes duties on such imports.

- *India*. The Approved List of Module Manufacturers ("ALMM") was introduced in 2021 as a non-tariff barrier to incentivize domestic manufacturing of PV modules by approving the list of models and manufacturers who can participate in certain solar development projects. The ALMM is approved by the Ministry of New and Renewable Energy, and any modifications to the ALMM and its application may affect future investments in solar module manufacturing in India. In March 2023, the government of India temporarily suspended the ALMM, thereby exempting solar project developers from procuring modules from companies included in the ALMM through March 2024. Our operating results could be adversely impacted if such suspension is extended in future periods or if the ALMM restriction is significantly relaxed to allow modules to be imported from countries that are part of the Association of Southeast Asian Nations. In May 2023, the ALMM was amended to include a new minimum module efficiency threshold of 19% for most applications and 20% for utility-scale applications. Our ability to sell modules in the Indian market depends on the inclusion of our modules manufactured in India on the ALMM. We currently expect that we will be included in the ALMM once we receive certain certifications from the International Electrotechnical Commission and the Bureau of Indian Standards in late 2023. However, our modules may be initially precluded from utility-scale applications in India until we achieve the minimum product efficiency mentioned above.

Our ability to provide solar modules on economically attractive terms is also affected by the availability and cost of logistics services associated with the procurement of raw materials or equipment used in our manufacturing process and the shipping, handling, storage, and distribution of our modules. To mitigate certain logistics costs, we employ module contract structures that provide additional consideration to us if the cost of logistics services, excluding demurrage and detention, exceeds a defined threshold. We may also adjust our shipping plans to include additional lead times for module deliveries and/or utilize our network of U.S. distribution centers. Additionally, our manufacturing capacity expansions in the U.S. and India are expected to bring manufacturing activities closer to customer demand, further mitigating our exposure to the cost of ocean freight.

We generally price and sell our solar modules on a per watt basis. As of September 30, 2023, we had entered into contracts with customers for the future sale of 77.6 GW of solar modules for an aggregate transaction price of $23.0 billion, which we expect to recognize as revenue through 2030 as we transfer control of the modules to the customers. Such volume includes contracts for the sale of 40.3 GW of solar modules that include transaction price adjustments associated with future module technology improvements, including enhancements to certain energy related attributes. Based on these potential technology improvements, the contracted module volumes as of September 30, 2023, the expected timing such technology improvements are incorporated into our manufacturing process, and the expected timing of module deliveries, such adjustments, if realized, could result in additional revenue of up to $0.4 billion, the majority of which would be recognized in 2025, 2026 and 2027. In addition to these price adjustments, certain of our contracts with customers may include favorable price adjustments associated with sales freight in excess of a defined threshold. Certain of our contracts with customers may also include favorable or unfavorable price adjustments associated with changes to certain commodity prices and/or the module wattage committed for delivery. As a result, the revenue recognized from such contracts may increase or decrease in future periods relative to the original transaction price.

We continue to increase the nameplate production capacity of our existing manufacturing facilities by improving our production throughput, increasing module wattage (or conversion efficiency), and reducing manufacturing yield losses. Additionally, we recently commenced production of Series 7 modules at our third manufacturing facility in Ohio and our first manufacturing facility in India, and are in the process of expanding our manufacturing capacity by approximately 7.9 GW, including the construction of our fourth manufacturing facility in the United States, which is expected to commence operations in the second half of 2024; our fifth manufacturing facility in the United States, which is expected to commence operations in late 2025; and the expansion of our manufacturing footprint at our existing facilities in Ohio, which is expected to be completed in the first half of 2024. This additional capacity, and any other potential investments to add to or otherwise modify our existing manufacturing capacity in response to market demand and competition, may require significant internal and possibly external sources of capital, and may be subject to certain risks and uncertainties described in Item 1A. “Risk Factors” of our Annual Report on Form 10-K for the year ended December 31, 2022.

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, 2023 and 2022:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2023	2022	2023	2022
Net sales	100.0 %	100.0 %	100.0 %	100.0 %
Cost of sales	53.0 %	96.7 %	63.0 %	99.4 %
Gross profit	47.0 %	3.3 %	37.0 %	0.6 %
Selling, general and administrative	6.3 %	7.4 %	6.5 %	7.5 %
Research and development	5.1 %	4.6 %	5.0 %	5.0 %
Production start-up	1.5 %	3.1 %	2.5 %	2.5 %
Litigation loss	— %	— %	1.6 %	— %
Gain on sales of businesses, net	— %	1.0 %	— %	15.7 %
Operating income (loss)	34.1 %	(10.9)%	21.3 %	1.2 %
Foreign currency loss, net	(0.1)%	(0.8)%	(0.5)%	(0.7)%
Interest income	2.9 %	1.6 %	3.4 %	0.9 %
Interest expense, net	(0.5)%	(0.5)%	(0.3)%	(0.6)%
Other (expense) income, net	(0.1)%	0.8 %	(0.1)%	0.2 %
Income tax (expense) benefit	(2.8)%	2.0 %	(1.5)%	(3.2)%
Net income (loss)	33.5 %	(7.8)%	22.3 %	(2.3)%

Segment Overview

Our primary segment is our modules business, which involves the design, manufacture, and sale of CdTe solar modules, which convert sunlight into electricity. Third-party customers of our modules segment include developers and operators of systems, utilities, independent power producers, commercial and industrial companies, and other system owners. Our residual business operations include certain project development activities, O&M services, the results of operations from PV solar power systems we owned and operated in certain international regions, and the sale of such systems to third-party customers.

Net sales

We generally price and sell our solar modules on a per watt basis. During the three and nine months ended September 30, 2023, we sold the majority of our solar modules to developers and operators of systems in the United States, and substantially all of our modules business net sales were denominated in U.S. dollars. We recognize revenue for module sales at a point in time following the transfer of control of the modules to the customer, which typically occurs upon shipment or delivery depending on the terms of the underlying contracts. Net sales from our residual business operations primarily consists of revenue recognized for sales of development projects or completed systems, including any modules installed in such systems and any revenue from energy generated by such systems.

The following table shows net sales by reportable segment for the three and nine months ended September 30, 2023 and 2022:

(Dollars in thousands)	Three Months Ended September 30, 2023	Three Months Ended September 30, 2022	Three Month Change		Nine Months Ended September 30, 2023	Nine Months Ended September 30, 2022	Nine Month Change	
Modules	$ 800,393	$ 619,922	$ 180,471	29 %	$ 2,139,220	$ 1,582,248	$ 556,972	35 %
Other	697	9,011	(8,314)	(92)%	20,829	34,680	(13,851)	(40)%
Net sales	$ 801,090	$ 628,933	$ 172,157	27 %	$ 2,160,049	$ 1,616,928	$ 543,121	34 %

Net sales from our modules segment increased $180.5 million for the three months ended September 30, 2023 compared to the three months ended September 30, 2022 primarily due to a 20% increase in the volume of modules sold to third parties and an 8% increase in the average selling price per watt. Net sales from our residual business operations during the three months ended September 30, 2023 decreased $8.3 million compared to the three months ended September 30, 2022 primarily due to higher net sales in the prior period associated with operating PV solar power systems and providing O&M services in certain international jurisdictions prior to the sale of such systems and businesses.

Net sales from our modules segment increased $557.0 million for the nine months ended September 30, 2023 compared to the nine months ended September 30, 2022 primarily due to a 29% increase in the volume of modules sold to third parties and a 5% increase in the average selling price per watt. Net sales from our residual business operations during the nine months ended September 30, 2023 decreased $13.9 million compared to the nine months ended September 30, 2022 primarily due to higher net sales in the prior period associated with operating PV solar power systems and providing O&M services in certain international jurisdictions prior to the sale of such systems and businesses, partially offset by the recognition of certain contingent earnouts in the current period for projects we sold in prior periods.

Cost of sales

Our modules business cost of sales includes the cost of raw materials and components for manufacturing solar modules, such as glass, transparent conductive coatings, CdTe and other thin film semiconductors, laminate materials, connector assemblies, edge seal materials, and frames. In addition, our cost of sales includes direct labor for the manufacturing of solar modules and manufacturing overhead, such as engineering, equipment maintenance, quality and production control, and information technology. Our cost of sales also includes depreciation of manufacturing plant and equipment, facility-related expenses, environmental health and safety costs, and costs associated with shipping, warranties, and solar module collection and recycling (excluding accretion). Cost of sales for our residual business operations includes project-related costs, such as development costs (legal, consulting, transmission upgrade, interconnection, permitting, and other similar costs), EPC costs (consisting primarily of solar modules, inverters, electrical and mounting hardware, project management and engineering, and construction labor), and site specific costs.

The following table shows cost of sales by reportable segment for the three and nine months ended September 30, 2023 and 2022:

(Dollars in thousands)	Three Months Ended September 30, 2023	Three Months Ended September 30, 2022	Three Month Change		Nine Months Ended September 30, 2023	Nine Months Ended September 30, 2022	Nine Month Change	
Modules	$ 433,034	$ 595,882	$ (162,848)	(27)%	$ 1,363,050	$ 1,515,852	$ (152,802)	(10)%
Other	(8,119)	12,069	(20,188)	(167)%	(1,647)	91,831	(93,478)	(102)%
Cost of sales	$ 424,915	$ 607,951	$ (183,036)	(30)%	$ 1,361,403	$ 1,607,683	$ (246,280)	(15)%
% of net sales	53.0 %	96.7 %			63.0 %	99.4 %		

Cost of sales decreased $183.0 million, or 30%, and decreased 43.7 percentage points as a percent of net sales for the three months ended September 30, 2023 compared to the three months ended September 30, 2022. The decrease in cost of sales was driven by a $162.8 million decrease in our modules segment cost of sales primarily due to (i) the recognition of the advanced manufacturing production credit under Section 45X of the IRC, which decreased cost of sales by $204.6 million, and (ii) lower sales freight of $111.0 million, partially offset by (iii) higher costs of $118.0 million due to an increase in the volume of modules sold and (iv) higher under-utilization charges associated with the initial ramp of our first Series 7 manufacturing facilities in Ohio and India, which increased cost of sales by $25.2 million. The decrease in cost of sales was also driven by a $20.2 million decrease in our residual business operations cost of sales primarily due to lower costs associated with operating PV solar power systems and providing O&M services in certain international jurisdictions due to the sale of such systems and businesses in the prior period, as well as a favorable current-period settlement with a former supplier that resulted in an $8.4 million benefit to cost of sales.

Cost of sales decreased $246.3 million, or 15%, and decreased 36.4 percentage points as a percent of net sales for the nine months ended September 30, 2023 compared to the nine months ended September 30, 2022. The decrease in cost of sales was driven by a $152.8 million decrease in our modules segment cost of sales primarily due to (i) the advanced manufacturing production credit described above, which decreased cost of sales by $429.7 million, (ii) lower sales freight of $162.9 million, and (iii) continued module cost reductions of $80.3 million, partially offset by (iv) higher costs of $430.0 million due to an increase in the volume of modules sold and (v) higher under-utilization charges associated with the initial ramp of our first Series 7 manufacturing facilities in Ohio and India, which increased cost of sales by $66.0 million. The decrease in cost of sales was also driven by a $93.5 million decrease in our residual business operations primarily due to an impairment loss of $57.8 million in the prior period associated with the anticipated sale of the Luz del Norte project and higher costs in the prior period associated with operating PV solar power systems and providing O&M services in certain international jurisdictions prior to the sale of such systems and businesses.

Gross profit

Gross profit may be affected by numerous factors, including the selling prices of our modules and the selling prices of projects and services included in our residual business operations, our manufacturing costs, the capacity utilization of our manufacturing facilities, and foreign exchange rates. Gross profit may also be affected by the mix of net sales from our modules business and residual business operations.

The following table shows gross profit (loss) for the three and nine months ended September 30, 2023 and 2022:

	Three Months Ended September 30,				Nine Months Ended September 30,			
(Dollars in thousands)	2023	2022	Three Month Change		2023	2022	Nine Month Change	
Gross profit	$ 376,175	$ 20,982	$ 355,193	>100%	$ 798,646	$ 9,245	$ 789,401	>100%
% of net sales	47.0 %	3.3 %			37.0 %	0.6 %		

Gross profit as a percentage of net sales increased 43.7 percentage points to 47.0% during the three months ended September 30, 2023 from 3.3% during the three months ended September 30, 2022 primarily due to (i) the advanced manufacturing production credit described above, (ii) reductions in sales freight costs, and (iii) a higher average selling price per watt for modules sold in the current period.

Gross profit as a percentage of net sales increased 36.4 percentage points to 37.0% during the nine months ended September 30, 2023 from 0.6% during the nine months ended September 30, 2022. Such increases were primarily due to (i) the advanced manufacturing production credit described above, (ii) reductions in sales freight costs, (iii) a higher average selling price per watt for modules sold in the current period, (iv) the prior period impairment of the Luz del Norte project described above, and (v) continued module cost reductions.

Selling, general and administrative

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

The following table shows selling, general and administrative expense for the three and nine months ended September 30, 2023 and 2022:

	Three Months Ended September 30,				Nine Months Ended September 30,			
(Dollars in thousands)	2023	2022	Three Month Change		2023	2022	Nine Month Change	
Selling, general and administrative	$ 50,172	$ 46,368	$ 3,804	8 %	$ 140,528	$ 121,990	$ 18,538	15 %
% of net sales	6.3 %	7.4 %			6.5 %	7.5 %		

Selling, general and administrative expense for the three months ended September 30, 2022 increased compared to the three months ended September 30, 2022, primarily due to higher costs associated with our implementation of a new global enterprise resource planning ("ERP") system and higher expected credit losses due to an increase in accounts receivable, partially offset by lower share-based compensation expense.

Selling, general and administrative expense for the nine months ended September 30, 2023 increased compared to the nine months ended September 30, 2022 primarily due to higher professional fees, higher costs related to the ERP implementation mentioned above, and higher expected credit losses due to an increase in accounts receivable.

Research and development

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

The following table shows research and development expense for the three and nine months ended September 30, 2023 and 2022:

	Three Months Ended September 30,				Nine Months Ended September 30,			
(Dollars in thousands)	2023	2022	Three Month Change		2023	2022	Nine Month Change	
Research and development	$ 41,190	$ 29,183	$ 12,007	41 %	$ 108,445	$ 81,520	$ 26,925	33 %
% of net sales	5.1 %	4.6 %			5.0 %	5.0 %		

Research and development expense for the three and nine months ended September 30, 2023 increased compared to the three and nine months ended September 30, 2022 primarily due to an increase in employee compensation expense resulting from an increase in headcount and higher material and module testing costs.

Production start-up

Production start-up expense consists of costs associated with operating a production line before it is qualified for commercial production, including the cost of raw materials for solar modules run through the production line during the qualification phase, employee compensation for individuals supporting production start-up activities, and applicable facility related costs. Production start-up expense also includes costs related to the selection of a new site and implementation costs for manufacturing process improvements to the extent we cannot capitalize these expenditures.

The following table shows production start-up expense for the three and nine months ended September 30, 2023 and 2022:

	Three Months Ended September 30,						Nine Months Ended September 30,					
(Dollars in thousands)	**2023**		**2022**		**Three Month Change**		**2023**		**2022**		**Nine Month Change**	
Production start-up	$	12,059	$	19,768	$ (7,709)	(39)%	$	54,930	$	40,337	$ 14,593	36 %
% of net sales		1.5 %		3.1 %				2.5 %		2.5 %		

During the three months ended September 30, 2023, we incurred production start-up expense primarily for our first manufacturing facility in India, which commenced operations during the three months ended September 30, 2023, and for our fourth manufacturing facility in the U.S., which is expected to commence operations in the second half of 2024. During the three months ended September 30, 2022, we incurred production start-up expense primarily for our third manufacturing facility in the U.S., which commenced production of modules in early 2023.

During the nine months ended September 30, 2023, we incurred production start-up expense primarily for our first manufacturing facility in India, our third manufacturing facility in the U.S., certain manufacturing upgrades at our Malaysian facilities, and our fourth manufacturing facility in the U.S. During the nine months ended September 30, 2022, we incurred production start-up expense primarily for our third manufacturing facility in the U.S. and certain manufacturing upgrades at our Malaysian facilities.

Litigation loss

The following table shows litigation loss for the three and nine months ended September 30, 2023 and 2022:

	Three Months Ended September 30,						Nine Months Ended September 30,					
(Dollars in thousands)	**2023**		**2022**		**Three Month Change**		**2023**		**2022**		**Nine Month Change**	
Litigation loss	$	—	$	—	$ —	— %	$	35,590	$	—	$ 35,590	100 %
% of net sales		— %		— %				1.6 %		— %		

In July 2021, Southern filed an arbitration demand with the American Arbitration Association against two of the Company's subsidiaries alleging breach of the EPC agreements for five projects in the United States for which such subsidiaries served as the EPC contractor. On July 19, 2023, the arbitration panel issued an interim award letter adopting certain of Southern's proposed individual award claims in the amount of $35.6 million. As a result, we accrued a loss for this matter in our results of operations for the nine months ended September 30, 2023. See Note 12. "Commitments and Contingencies" to our condensed consolidated financial statements for further information about this matter.

Gain on sales of businesses, net

The following table shows gain on sales of businesses, net for the three and nine months ended September 30, 2023 and 2022:

(Dollars in thousands)	Three Months Ended September 30, 2023	Three Months Ended September 30, 2022	Three Month Change		Nine Months Ended September 30, 2023	Nine Months Ended September 30, 2022	Nine Month Change	
Gain on sales of businesses, net	$ 211	$ 5,984	$ (5,773)	(96)%	$ 329	$ 253,272	$ (252,943)	(100)%
% of net sales	— %	1.0 %			— %	15.7 %		

During the three months ended September 30, 2022, we completed the sale of our Australian O&M operations to a subsidiary of Clairvest and our Japanese O&M operations to a subsidiary of PAG. During the nine months ended September 30, 2022, we also completed the sale of our Japan project development business and the sale of our Chilean O&M operations to a subsidiary of Clairvest. During the three and nine months ended September 30, 2023, we recognized certain post-closing adjustments associated with these transactions, which were included in “Gain on sales of businesses, net” in our condensed consolidated statements of operations. See Note 3. “Sales of Businesses” to our condensed consolidated financial statements for further information related to these transactions.

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, 2023 and 2022:

(Dollars in thousands)	Three Months Ended September 30, 2023	Three Months Ended September 30, 2022	Three Month Change		Nine Months Ended September 30, 2023	Nine Months Ended September 30, 2022	Nine Month Change	
Foreign currency loss, net	$ (987)	$ (4,859)	$ 3,872	(80)%	$ (11,586)	$ (12,041)	$ 455	(4)%

Foreign currency loss, net for the three and nine months ended September 30, 2023 decreased compared to the three and nine months ended September 30, 2022 primarily due to the differences between our economic hedge positions and the underlying currency exposures, higher costs associated with hedging activities related to our subsidiaries in India, and the beneficial impact of certain hedging activities in Japan in the prior period.

Interest income

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

The following table shows interest income for the three and nine months ended September 30, 2023 and 2022:

(Dollars in thousands)	Three Months Ended September 30, 2023	Three Months Ended September 30, 2022	Three Month Change		Nine Months Ended September 30, 2023	Nine Months Ended September 30, 2022	Nine Month Change	
Interest income	$ 23,254	$ 9,749	$ 13,505	139 %	$ 74,102	$ 14,954	$ 59,148	396 %

Interest income for the three and nine months ended September 30, 2023 increased compared to the three and nine months ended September 30, 2022 primarily due to higher yields on cash and marketable securities and higher average balances associated with marketable securities.

Interest expense, net

Interest expense, net is primarily comprised of interest incurred on long-term debt. We may capitalize interest expense to our project assets or property, plant and equipment when such costs qualify for interest capitalization, which reduces the amount of net interest expense reported in any given period.

The following table shows interest expense, net for the three and nine months ended September 30, 2023 and 2022:

	Three Months Ended September 30,				Nine Months Ended September 30,			
(Dollars in thousands)	**2023**	**2022**	**Three Month Change**		**2023**	**2022**	**Nine Month Change**	
Interest expense, net	$ (3,734)	$ (2,991)	$ (743)	25 %	$ (5,897)	$ (9,092)	$ 3,195	(35)%

Interest expense, net for the three months ended September 30, 2023 increased compared to the three months ended September 30, 2022 primarily due to increased borrowings under our India credit facility, partially offset by the assumption of our Luz del Norte project loans by a subsidiary of Toesca Asset Management in connection with the sale of the project in late 2022. Interest expense, net for the nine months ended September 30, 2023 decreased compared to the nine months ended September 30, 2022 due to the assumption of our Luz del Norte project loans mentioned above, partially offset by increased borrowings under our India credit facility.

Other (expense) income, net

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

The following table shows other (expense) income, net for the three and nine months ended September 30, 2023 and 2022:

	Three Months Ended September 30,				Nine Months Ended September 30,			
(Dollars in thousands)	**2023**	**2022**	**Three Month Change**		**2023**	**2022**	**Nine Month Change**	
Other (expense) income, net	$ (1,033)	$ 4,774	$ (5,807)	(122)%	$ (1,492)	$ 2,679	$ (4,171)	(156)%

Other expense for the three and nine months ended September 30, 2023 increased compared to the three and nine months ended September 30, 2022 primarily due to an increase in the value of a strategic investment in the prior period.

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 Singapore, Malaysia, and Vietnam. Significant judgments and estimates are required to determine our consolidated income tax expense. The statutory federal corporate income tax rate in the United States is 21%, and the tax rates in Singapore, Malaysia, and Vietnam are 17%, 24%, and 20%, respectively. In Malaysia, we have been granted a long-term tax holiday, scheduled to expire in 2027, pursuant to which substantially all of our income earned in Malaysia is exempt from income tax, conditional upon our continued compliance with certain employment and investment thresholds. In Vietnam, we have been granted a long-term tax incentive, scheduled to expire at the end of 2036, pursuant to which income earned in Vietnam is subject to reduced annual tax rates, conditional upon our continued compliance with certain revenue and R&D spending thresholds.

The following table shows income tax (expense) benefit for the three and nine months ended September 30, 2023 and 2022:

(Dollars in thousands)	Three Months Ended September 30, 2023	Three Months Ended September 30, 2022	Three Month Change		Nine Months Ended September 30, 2023	Nine Months Ended September 30, 2022	Nine Month Change	
Income tax (expense) benefit	$ (22,067)	$ 12,512	$ (34,579)	276 %	$ (33,071)	$ (51,788)	$ 18,717	(36)%
Effective tax rate	7.6 %	20.3 %			6.4 %	341.4 %		

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 $34.6 million during the three months ended September 30, 2023 compared to the three months ended September 30, 2022 primarily due to higher pretax income, partially offset by the beneficial effect of tax law changes associated with the IRA and proposed FTC regulations in the current period.

Income tax expense decreased $18.7 million during the nine months ended September 30, 2023 compared to the nine months ended September 30, 2022 primarily due to the beneficial effect of tax law changes associated with the IRA and proposed FTC regulations, higher prior period losses in certain jurisdictions for which no tax benefit could be recorded, higher excess tax benefits associated with share-based compensation, and a discrete tax expense in the prior period due to the remeasurement of our net deferred tax assets in Vietnam, partially offset by higher pretax income in the current period.

Critical Accounting Policies and Estimates

In preparing our condensed consolidated financial statements in conformity with U.S. GAAP, we make estimates and assumptions that affect the amounts of reported assets, liabilities, revenues, and expenses, as well as the disclosure of contingent liabilities. Some of our accounting policies require the application of significant judgment in the selection of the appropriate assumptions for making these estimates. By their nature, these judgments are subject to an inherent degree of uncertainty. We base our judgments and estimates on our historical experience, our forecasts, and other available information as appropriate. We believe the judgments and estimates involved in accrued solar module collection and recycling, product warranties, accounting for income taxes, long-lived asset impairments, and government grants (described in further detail below) 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 the accounting policies that require the most significant judgment and estimates in the preparation of our condensed consolidated financial statements, refer to our Annual Report on Form 10-K for the year ended December 31, 2022. There have been no material changes to our accounting policies during the nine months ended September 30, 2023.

Government Grants. We continue to evaluate the extent of benefits available to us pursuant to the IRA, which we expect will favorably impact our results of operations in future periods. For example, we currently expect to qualify for the advanced manufacturing production credit under Section 45X of the IRC, which provides certain specified benefits for solar modules and solar module components manufactured in the United States and sold to third parties. For eligible components, the credit is equal to (i) $12 per square meter for a PV wafer, (ii) 4 cents multiplied by the capacity of a PV cell, and (iii) 7 cents multiplied by the capacity of a PV module. Based on the current form factor of our modules, we expect to qualify for a credit of approximately 17 cents per watt for each module produced in the United States and sold to a third party.

There are currently several critical and complex aspects of the IRA pending technical guidance and regulations from the IRS and U.S. Treasury Department that could affect the estimated benefits we have recognized and expect to recognize from the advanced manufacturing production credit. Such pending guidance is described in Item 1A. “Risk Factors” of our Annual Report on Form 10-K for the year ended December 31, 2022, and certain proposed guidance recently published by the IRS is described above in “Certain Trends and Uncertainties.” Any modifications to the law or its effects arising, for example, through (i) technical guidance and regulations from the IRS and U.S. Treasury Department, (ii) subsequent amendments to or interpretations of the law, and/or (iii) future laws or regulations rendering certain provisions of the IRA less effective or ineffective, in whole or in part, could result in material adverse changes to the benefits we have recognized and expect to recognize.

Recent Accounting Pronouncements

None.

Liquidity and Capital Resources

As of September 30, 2023, we believe that our cash, cash equivalents, marketable securities, cash flows from operating activities, and contracts with customers for the future sale of solar modules will be sufficient to meet our working capital and capital expenditure needs for at least the next 12 months. In addition, we have availability under our Revolving Credit Facility, under which we have made no borrowings as of September 30, 2023. As necessary, we also believe we will have adequate access to the capital markets, including potential opportunities for near-term bridge financing to address the uncertainty of payment timing associated with IRA credits generated by our U.S. manufacturing operations. 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, including near-term construction activities and purchases of manufacturing equipment for our newest manufacturing and R&D facilities in the United States. However, our ability to raise capital on terms commercially acceptable to us could be constrained if there is insufficient lender or investor interest due to company-specific, industry-wide, or broader market concerns. Any incremental debt financings could result in increased debt service expenses and/or restrictive covenants, which could limit our ability to pursue our strategic plans.

As of September 30, 2023, we had \$1.8 billion in cash, cash equivalents, and marketable securities compared to \$2.6 billion as of December 31, 2022. The decrease in cash, cash equivalents, and marketable securities was primarily driven by purchases of property, plant and equipment, various operating expenditures, and certain advance payments of raw materials, partially offset by proceeds from borrowings under long-term debt agreements and cash receipts from module sales, including advance payments for future sales. As of September 30, 2023, \$1.3 billion of our cash, cash equivalents, and marketable securities was held by our foreign subsidiaries and was primarily based in U.S. dollar, Euro, and Indian rupee denominated holdings. Our investment policy seeks to preserve our investment principal and maintain adequate liquidity to meet our cash flow requirements, while at the same time optimizing the return on our investments. Such policy applies to all invested funds, whether managed internally or externally. Pursuant to such policy, we place our investments with a diversified group of high-quality financial institutions and limit the concentration of such investments with any one counterparty. We place significant emphasis on the creditworthiness of financial institutions and assess the credit ratings and financial health of our counterparty financial institutions when making investment decisions.

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

Although we compete in markets that do not require solar-specific government subsidies or support programs, such incentives continue to influence the demand for PV solar energy around the world. For example, the financial incentives provided by the IRA are expected to increase both the demand for, and the domestic manufacturing of, solar modules in the United States. We continue to evaluate the extent of benefits available to us by the IRA, which are expected to favorably impact our liquidity and capital resources in future periods. For example, we currently expect to qualify for the advanced manufacturing production credit under Section 45X of the IRC, which provides certain specified benefits for solar modules and solar module components manufactured in the United States and sold to third parties. Such credit may be refundable or transferable to a third party and is available from 2023 to 2032, subject to phase down beginning in 2030. Based on the current form factor of our modules, we expect to qualify for a credit of approximately 17 cents per watt for each module produced in the United States and sold to a third party. Accordingly, we expect the advanced manufacturing production credit will provide us with a significant source of funding throughout its 10-year period. For more information about certain risks associated with the benefits available to us under the IRA, see Item 1A. “Risk Factors” of our Annual Report on Form 10-K for the year ended December 31, 2022. See Note 7. "Government Grants" to our condensed consolidated financial statements for further information about government grants.

As a result of various market opportunities and increased demand for our products, we recently commenced production of Series 7 modules at our third manufacturing facility in Ohio and our first manufacturing facility in India and are in the process of expanding our manufacturing capacity by approximately 7.9 GW, including the construction of our fourth manufacturing facility in the United States, which is expected to commence operations in the second half of 2024; our fifth manufacturing facility in the United States, which is expected to commence operations in late 2025; and the expansion of our manufacturing footprint at our existing facilities in Ohio, which is expected to be completed in the first half of 2024. In aggregate, we currently expect our remaining investment in these facilities and upgrades to be approximately $1.9 billion. The capital expenditures necessary to expand our capacity may be financed, in part, by advance payments from customers for module sales in future periods, the advanced manufacturing production credit described above, and/or near-term bridge financing instruments.

In addition to the expansion plans described above, we continue to increase the nameplate production capacity of our existing manufacturing facilities by improving our production throughput, increasing module wattage (or conversion efficiency), and reducing manufacturing yield losses. We have a demonstrated history of innovation, continuous improvement, and manufacturing success driven by our significant investments in various R&D initiatives. We continue to invest significant financial resources in such initiatives, including approximately $0.3 billion of remaining investments for a dedicated R&D facility in the United States to support the implementation of our technology roadmap. We expect such R&D facility to feature a high-tech pilot manufacturing line, allowing for the production of full-sized prototypes of thin film and multi-junction PV modules. Such R&D facility is expected to be completed in the first half of 2024. During 2023, we expect to spend $1.7 billion to $1.9 billion for capital expenditures, including the new facilities mentioned above and upgrades to machinery and equipment that we believe will further increase our module wattage and expand capacity and throughput at our manufacturing facilities. These capital investments, and any other potential investments to implement our technology roadmap, may require significant internal and possibly external sources of capital, and may be subject to certain risks and uncertainties described in Item 1A. “Risk Factors” of our Annual Report on Form 10-K for the year ended December 31, 2022.

We have also committed and expect to continue committing significant working capital to purchase various raw materials used in our module manufacturing process. Our failure to obtain raw materials and components that meet our quality, quantity, and cost requirements in a timely manner could interrupt or impair our ability to manufacture our solar modules or increase our manufacturing costs. Accordingly, we may enter into long-term supply agreements to mitigate potential risks related to the procurement of key raw materials and components, and such agreements may be noncancelable or cancelable with a significant penalty. For example, we have entered into long-term supply agreements for the purchase of certain specified minimum volumes of substrate glass and cover glass for our PV solar modules. We have the right to terminate certain of these agreements upon payment of specified termination penalties (which, in aggregate, are up to $641 million as of September 30, 2023 and decline over the remaining supply periods). Additionally, for certain strategic suppliers, we have made, and may in the future be required to make, certain advance payments to secure the raw materials necessary for our module manufacturing.

We have also committed certain financial resources to fulfill our solar module collection and recycling obligations, and have established a trust under which these funds are put into custodial accounts with an established and reputable bank. As of September 30, 2023, such funds were comprised of restricted marketable securities of $183.7 million and restricted cash and cash equivalents balances of $5.8 million. As of September 30, 2023, our module collection and recycling liability was $130.1 million. Trust funds may be disbursed for qualified module collection and recycling costs (including capital and facility related recycling costs), payments to customers for assuming collection and recycling obligations, and reimbursements of any overfunded amounts. Investments in the trust must meet certain investment quality criteria comparable to highly rated government or agency bonds. As necessary, we adjust the funded amounts for our estimated collection and recycling obligations based on the estimated costs of collecting and recycling covered modules, estimated rates of return on our restricted marketable securities, and an estimated solar module life of 25 years, less amounts already funded in prior years.

As of September 30, 2023, we had no off-balance sheet debt or similar obligations, other than financial assurance related instruments, which are not classified as debt. We do not guarantee any third-party debt. See Note 12. "Commitments and Contingencies" to our condensed consolidated financial statements for further information about our financial assurance related instruments.

Cash Flows

The following table summarizes key cash flow activity for the nine months ended September 30, 2023 and 2022 (in thousands):

	Nine Months Ended September 30,	
	2023	**2022**
Net cash provided by operating activities	$ 41,151	$ 78,154
Net cash used in investing activities	(299,630)	(622,519)
Net cash provided by financing activities	276,114	209,461
Effect of exchange rate changes on cash, cash equivalents, restricted cash, and restricted cash equivalents	(855)	39,866
Net increase (decrease) in cash, cash equivalents, restricted cash, and restricted cash equivalents	$ 16,780	$ (295,038)

Operating Activities

The decrease in net cash provided by operating activities was primarily driven by certain advance payments for raw materials, higher operating expenditures, and lower cash receipts from module sales, partially offset by higher expenditures for the construction of certain projects in Japan in the prior period.

Investing Activities

The decrease in net cash used in investing activities was primarily due to higher net sales and maturities of marketable securities in the current period, partially offset by higher purchases of property, plant and equipment in the current period and proceeds from the sale of our Japan project development business in the prior period.

Financing Activities

The increase in net cash provided by financing activities was primarily due to higher borrowings under the India Credit Facility in the current period compared to net borrowings under various long-term debt agreements in the prior period.

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, 2022.

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, 2023 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, 2023 that materially affected, or are reasonably likely to materially affect, our internal control over financial reporting. Based on that evaluation, there were no such changes in our internal control over financial reporting that occurred during the three months ended September 30, 2023.

In August 2023, we completed our implementation of a new global ERP system, which replaced many of our existing core financial and business systems, and post-implementation activities are expected to continue over several months. Among other things, the new global ERP system is expected to (i) improve the efficiency and effectiveness of certain financial and business transaction processes, (ii) enhance the flow of financial information, and (iii) strengthen data management and analysis. The ERP implementation resulted in changes to various processes and procedures, for which the design of certain associated internal controls has been modified. None of these modifications have materially affected our internal control over financial reporting. As the post-implementation activities continue, we may have additional changes to certain of our processes and procedures, and we will evaluate quarterly whether such changes materially affect our internal control over financial reporting. As of September 30, 2023, no changes have been made in our internal control over financial reporting with respect to this implementation.

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 12. "Commitments and Contingencies" under the heading "Legal Proceedings" of our condensed consolidated financial statements 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 Item 1A. "Risk Factors" of our Annual Report on Form 10-K for the year ended December 31, 2022, 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 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. There have been no material changes in the risk factors contained in our Annual Report on Form 10-K.

Item 5. *Other Information*

From time to time, our directors and officers may adopt plans for the purchase or sale of our securities. Such plans may be designed to satisfy the affirmative defense conditions of Rule 10b5-1 under the Exchange Act or may constitute non-Rule 10b5-1 trading arrangements (as defined in Item 408(c) of Regulation S-K). During the three months ended September 30, 2023, none of our officers or directors adopted or terminated non-Rule 10b5-1 trading arrangements. However, certain officers of the Company adopted 10b5-1 trading plans for the sale of our securities. The following table provides certain terms of such plans:

Name	Position	Action	Adoption Date	Expiration Date	Aggregate Number of Securities to be Sold (1)
Patrick Buehler	Chief Product Officer	Adoption	August 29, 2023	May 15, 2024	7,456
Kuntal Verma	Chief Manufacturing Officer	Adoption	July 31, 2023	March 22, 2024	10,131
Caroline Stockdale	Chief People & Communications Officer	Adoption	July 31, 2023	July 26, 2024	12,406
Byron Jeffers	Chief Accounting Officer	Adoption	July 31, 2023	April 30, 2024	2,703

(1) Represents the gross number of shares subject to the Rule 10b5-1(c) plan, excluding the potential effect of shares withheld for taxes. Amounts related to PUs are presented at their target amounts. The actual number of PUs that vest following the end of the applicable performance period, if any, will depend on the relative attainment of the performance metrics.

Item 6. *Exhibits*

The following exhibits are filed with this Quarterly Report on Form 10-Q:

Exhibit Number	Exhibit Description
3.1	Amended and Restated Certificate of Incorporation of First Solar, Inc. (incorporated by reference to Exhibit 3.1 to First Solar, Inc.'s Registration Statement on Form S-1 filed on October 25, 2006)
3.2	Amended and Restated Bylaws of First Solar, Inc. (incorporated by reference to Exhibit 3.1 to First Solar, Inc.'s Form 8-K filed on July 26, 2023)
31.1*	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
31.2*	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
32.1†	Certification of Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101.INS	XBRL Instance Document – the instance document does not appear in the Interactive Data file because its XBRL tags are embedded within the Inline XBRL document
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	XBRL Taxonomy Label Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document
104	Cover page formatted as Inline XBRL and contained in Exhibit 101

* Filed herewith.

† Furnished herewith. 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 such filings.

SIGNATURE

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

FIRST SOLAR, INC.

Date: October 31, 2023	By:	/s/ BYRON JEFFERS
	Name:	Byron Jeffers
	Title:	Chief Accounting Officer

EXHIBIT 31.1

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, 2023, 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.

October 31, 2023	By:	/s/ MARK R. WIDMAR
	Name:	Mark R. Widmar
	Title:	Chief Executive Officer

EXHIBIT 31.2

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, 2023, 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.

October 31, 2023	By:	/s/ ALEXANDER R. BRADLEY
	Name:	Alexander R. Bradley
	Title:	Chief Financial Officer

EXHIBIT 32.1

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, 2023, 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

October 31, 2023	By:	/s/ MARK R. WIDMAR
	Name:	Mark R. Widmar
	Title:	Chief Executive Officer
October 31, 2023	By:	/s/ ALEXANDER R. BRADLEY
	Name:	Alexander R. Bradley
	Title:	Chief Financial Officer