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DELTA REPORT

10-Q

FSLR - FIRST SOLAR, INC.

10-Q - SEPTEMBER 30, 2024 COMPARED TO 10-Q - JUNE 30, 2024

The following comparison report has been automatically generated

TOTAL DELTAS	786
CHANGES	293
DELETIONS	286
ADDITIONS	207

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 June 30, 2024 September 30, 2024

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

FSLR_Logo_2021.jpg

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 July 26, 2024 October 25, 2024, 107,046,913 107,057,732 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 JUNE SEPTEMBER 30, 2024

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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." Units of electricity are typically stated in 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 June 30,			Six Months Ended June 30,					
	Three Months Ended September 30,			Nine Months Ended September 30,					
	2024	2024	2023	2024	2023	2024	2023	2024	2023

Net sales
Cost of sales
Gross profit
Operating expenses:
Selling, general and administrative
Selling, general and administrative
Selling, general and administrative
Research and development
Production start-up
Litigation loss
Total operating expenses
Gain on sales of businesses, net
Operating income
Foreign currency loss, net
Interest income
Interest expense, net
Other (expense) income, net
Other expense, net
Income before taxes
Income tax expense
Net income
Net income per share:
Net income per share:
Net income per share:
Basic
Basic
Basic
Diluted
Weighted-average number of shares used in per share calculations:
Basic
Basic
Basic
Diluted

See accompanying notes to these condensed consolidated financial statements.

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

	Three Months Ended June 30,		Six Months Ended June 30,	
	2024	2023	2024	2023
Net income	$ 349,356	$ 170,579	$ 585,972	$ 213,140
Other comprehensive (loss) income:				
Foreign currency translation adjustments	(2,944)	(5,348)	(11,477)	(2,693)
Unrealized (loss) gain on marketable securities and restricted marketable securities, net of tax of $41, $85, $143 and $(317)	(1,197)	(1,315)	(3,200)	5,651
Unrealized (loss) gain on derivative instruments, net of tax of $177, $(165), $(131) and $(873)	(571)	594	491	2,808
Other comprehensive (loss) income	(4,712)	(6,069)	(14,186)	5,766

Comprehensive income	$ 344,644	$ 164,510	$ 571,786	$ 218,906

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2024	2023	2024	2023
Net income	$ 312,956	$ 268,398	$ 898,928	$ 481,538
Other comprehensive income (loss):				
Foreign currency translation adjustments	9,775	(4,942)	(1,702)	(7,635)
Unrealized gain (loss) on marketable securities and restricted marketable securities, net of tax of $(464), $340, $(321) and $23	9,683	(8,696)	6,483	(3,045)
Unrealized (loss) gain on derivative instruments, net of tax of $0, $(214), $(131) and $(1,087)	(1)	719	490	3,527
Other comprehensive income (loss)	19,457	(12,919)	5,271	(7,153)
Comprehensive income	$ 332,413	$ 255,479	$ 904,199	$ 474,385

See accompanying notes to these condensed consolidated financial statements.

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

	June 30, 2024	December 31, 2023	September 30, 2024	December 31, 2023
ASSETS				
Current assets:				
Current assets:				
Current assets:				
Cash and cash equivalents				
Marketable securities				
Accounts receivable trade, net				
Government grants receivable, net				
Inventories				
Other current assets				
Total current assets				
Property, plant and equipment, net				
Deferred tax assets, net				
Restricted marketable securities				
Government grants receivable				
Goodwill				
Intangible assets, net				
Inventories				
Other assets				
Total assets				
LIABILITIES AND STOCKHOLDERS' EQUITY				
Current liabilities:				
Current liabilities:				
Current liabilities:				
Accounts payable				
Income taxes payable				

Accrued expenses		
Current portion of debt		
Deferred revenue		
Other current liabilities		
Total current liabilities		
Accrued solar module collection and recycling liability		
Long-term debt		
Deferred revenue		
Other liabilities		
Total liabilities		
Commitments and contingencies	Commitments and contingencies	Commitments and contingencies
Stockholders' equity:		
Common stock, $0.001 par value per share; 500,000,000 shares authorized; 107,045,972 and 106,847,475 shares issued and outstanding at June 30, 2024 and December 31, 2023, respectively		
Common stock, $0.001 par value per share; 500,000,000 shares authorized; 107,045,972 and 106,847,475 shares issued and outstanding at June 30, 2024 and December 31, 2023, respectively		
Common stock, $0.001 par value per share; 500,000,000 shares authorized; 107,045,972 and 106,847,475 shares issued and outstanding at June 30, 2024 and December 31, 2023, respectively		
Common stock, $0.001 par value per share; 500,000,000 shares authorized; 107,057,732 and 106,847,475 shares issued and outstanding at September 30, 2024 and December 31, 2023, respectively		
Common stock, $0.001 par value per share; 500,000,000 shares authorized; 107,057,732 and 106,847,475 shares issued and outstanding at September 30, 2024 and December 31, 2023, respectively		
Common stock, $0.001 par value per share; 500,000,000 shares authorized; 107,057,732 and 106,847,475 shares issued and outstanding at September 30, 2024 and December 31, 2023, respectively		
Additional paid-in capital		
Accumulated earnings		
Accumulated other comprehensive loss		
Total stockholders' equity		
Total liabilities and stockholders' equity		

See accompanying notes to these condensed consolidated financial statements.

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

	Three Months Ended June 30, 2024					Three Months Ended September 30, 2024				
	Common Stock	Additional Paid-In Capital	Accumulated Earnings	Accumulated Other Comprehensive Loss	Total Stockholders' Equity	Common Stock	Additional Paid-In Capital	Accumulated Earnings	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
Balance at March 31, 2024										
Balance at March 31, 2024										
Balance at March 31, 2024										
Balance at June 30, 2024										
Balance at June 30, 2024										
Balance at June 30, 2024										
Net income										
Other comprehensive income										
Common stock issued for share-based compensation										

Tax withholding related to vesting of restricted stock
Share-based compensation expense
Balance at September 30, 2024

	Three Months Ended September 30, 2023				
	Common Stock	Additional Paid-In Capital	Accumulated Earnings	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
Balance at June 30, 2023					
Net income					
Other comprehensive loss					
Common stock issued for share-based compensation					
Tax withholding related to vesting of restricted stock					
Share-based compensation expense					

Three Months Ended September 30, 2023
Three Months Ended September 30, 2023
Balance at June 30, 2023
Balance at June 30, 2023

Balance at June 30, 2024

	Three Months Ended June 30, 2023				
	Common Stock	Additional Paid-In Capital	Accumulated Earnings	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
Balance at March 31, 2023					
Net income					
Other comprehensive loss					
Common stock issued for share-based compensation					
Tax withholding related to vesting of restricted stock					
Share-based compensation expense					
Balance at June 30, 2023					
Balance at September 30, 2023					

Three Months Ended June 30, 2023
Three Months Ended June 30, 2023
Balance at March 31, 2023
Balance at March 31, 2023

See accompanying notes to these condensed consolidated financial statements.

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

	Six Months Ended June 30, 2024					Nine Months Ended September 30, 2024				
	Common Stock	Additional Paid-In Capital	Accumulated Earnings	Accumulated Other Comprehensive Loss	Total Stockholders' Equity	Common Stock	Additional Paid-In Capital	Accumulated Earnings	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
Balance at December 31, 2023										

Balance at December 31, 2023
Balance at December 31, 2023
Net income
Other comprehensive loss
Other comprehensive income
Common stock issued for share-based compensation
Tax withholding related to vesting of restricted stock
Share-based compensation expense
Balance at June 30, 2024
Balance at September 30, 2024

Six Months Ended June 30, 2023
Six Months Ended June 30, 2023
Six Months Ended June 30, 2023
Nine Months Ended September 30, 2023
Nine Months Ended September 30, 2023
Nine Months Ended September 30, 2023

	Common Stock	Additional Paid-In Capital	Accumulated Earnings	Accumulated Other Comprehensive Loss	Total Stockholders' Equity	Common Stock	Additional Paid-In Capital	Accumulated Earnings	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
Balance at December 31, 2022										
Balance at December 31, 2022										
Balance at December 31, 2022										
Net income										
Other comprehensive income										
Other comprehensive loss										
Common stock issued for share-based compensation										
Tax withholding related to vesting of restricted stock										
Share-based compensation expense										
Balance at June 30, 2023										
Balance at September 30, 2023										

See accompanying notes to these condensed consolidated financial statements.

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

		Six Months Ended June 30,		Nine Months Ended September 30,	
		2024	2024	2023	2024 2023
Cash flows from operating activities:	**Cash flows from operating activities:**		**Cash flows from operating activities:**		
Net income					
Adjustments to reconcile net income to cash provided by (used in) operating activities:					

Adjustments to reconcile net income to cash provided by operating activities:		
Depreciation, amortization and accretion		
Depreciation, amortization and accretion		
Depreciation, amortization and accretion		
Share-based compensation		
Deferred income taxes		
Gain on sales of businesses, net		
Other, net		
Changes in operating assets and liabilities:		
Accounts receivable, trade		
Accounts receivable, trade		
Accounts receivable, trade		
Inventories		
Government grants receivable		
Other assets		
Income tax receivable and payable		
Accounts payable and accrued expenses		
Deferred revenue		
Other liabilities		
Net cash provided by (used in) operating activities		
Net cash provided by operating activities		
Cash flows from investing activities:		
Purchases of property, plant and equipment		
Purchases of property, plant and equipment		
Purchases of property, plant and equipment		
Purchases of marketable securities and restricted marketable securities		
Proceeds from sales and maturities of marketable securities		
Acquisitions, net of cash acquired		
Other investing activities		
Net cash used in investing activities		
Cash flows from financing activities:		
Proceeds from borrowings under debt arrangements, net of issuance costs		
Proceeds from borrowings under debt arrangements, net of issuance costs		
Proceeds from borrowings under debt arrangements, net of issuance costs		
Repayment of debt		
Payments of tax withholdings for restricted shares		
Contingent consideration payment and other financing activities		
Net cash (used in) provided by financing activities		
Effect of exchange rate changes on cash, cash equivalents, restricted cash, and restricted cash equivalents		
Net decrease in cash, cash equivalents, restricted cash, and restricted cash equivalents		
Net (decrease) increase in cash, cash equivalents, restricted cash, and restricted cash equivalents		
Cash, cash equivalents, restricted cash, and restricted cash equivalents, beginning of the period		
Cash, cash equivalents, restricted cash, and restricted cash equivalents, end of the period		
Supplemental disclosure of noncash investing and financing activities:	**Supplemental disclosure of noncash investing and financing activities:**	**Supplemental disclosure of noncash investing and financing activities:**
Property, plant and equipment acquisitions funded by liabilities		
Proceeds to be received from asset-based government grants		
Acquisitions funded by liabilities and contingent consideration		

Acquisitions funded by contingent consideration

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 six nine months ended June 30, 2024 September 30, 2024 are not necessarily indicative of the results that may be expected for the year ending December 31, 2024 or for any other period. The condensed consolidated balance sheet at December 31, 2023 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, 2023 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. Cash, Cash Equivalents, and Marketable Securities

Cash, cash equivalents, and marketable securities consisted of the following at June 30, 2024 September 30, 2024 and December 31, 2023 (in thousands):

	June 30, 2024	December 31, 2023
	September 30, 2024	**December 31, 2023**
Cash and cash equivalents:		
Cash		
Cash		
Cash		
Money market funds		
Total cash and cash equivalents		
Marketable securities:		
Foreign debt		
Foreign debt		
Foreign debt		
U.S. debt		
Time deposits		
Total marketable securities		
Total cash, cash equivalents, and marketable securities		

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 June 30, 2024 September 30, 2024 and December 31, 2023 to the total of such amounts as presented in the condensed consolidated statements of cash flows (in thousands):

	Balance Sheet Line Item	Balance Sheet Line Item	June 30, 2024	December 31, 2023	Balance Sheet Line Item	September 30, 2024	December 31, 2023
Cash and cash equivalents							
Restricted cash – current							
Restricted cash – noncurrent							
Restricted cash equivalents – noncurrent							
Total cash, cash equivalents, restricted cash, and restricted cash equivalents							

During the three nine months ended June 30, 2024 September 30, 2024, we sold marketable securities for proceeds of $67.5 million and realized a gain of less than $0.1 million on such sales. During the three nine months ended June 30, 2023 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 8. “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 June 30, 2024 September 30, 2024 and December 31, 2023 (in thousands):

		As of June 30, 2024					As of September 30, 2024				
	Amortized Cost	Amortized Cost	Unrealized Gains	Unrealized Losses	Allowance for Credit Losses	Fair Value	Amortized Cost	Unrealized Gains	Unrealized Losses	Allowance for Credit Losses	Fair Value
U.S. debt											
Time deposits											
Total											

	As of December 31, 2023				
	Amortized Cost	Unrealized Gains	Unrealized Losses	Allowance for Credit Losses	Fair Value
Foreign debt	$ 35,000	$ —	$ 91	$ 14	$ 34,895
U.S. debt	45,625	88	1,614	10	44,089
Time deposits	76,533	—	—	22	76,511
Total	$ 157,158	$ 88	$ 1,705	$ 46	$ 155,495

The contractual maturities of our marketable securities as of June 30, 2024 September 30, 2024 were as follows (in thousands):

	Fair Value
Within one year	$ 28,913 255,869
After one year through five years	4,615 4,731
After five years through ten years	3,902 4,091
Total	$ 37,430 264,691

3. Restricted Marketable Securities

Restricted marketable securities consisted of the following as of June 30, 2024 September 30, 2024 and December 31, 2023 (in thousands):

	June 30, 2024	December 31, 2023	September 30, 2024	December 31, 2023
Foreign government obligations				
Supranational debt				
U.S. debt				
U.S. government obligations				

Total restricted marketable securities	

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 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 June 30, 2024 September 30, 2024 and December 31, 2023, such custodial accounts also included noncurrent restricted cash and cash equivalents balances of $1.8 $4.5 million and $6.2 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. During the three nine months ended June 30, 2024 September 30, 2024, we purchased $7.9 million of restricted marketable securities as part of our ongoing management of the custodial accounts.

See Note 8. "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 June 30, 2024 September 30, 2024 and December 31, 2023 (in thousands):

		As of June 30, 2024					As of September 30, 2024				
	Amortized Cost	Amortized Cost	Unrealized Gains	Unrealized Losses	Allowance for Credit Losses	Fair Value	Amortized Cost	Unrealized Gains	Unrealized Losses	Allowance for Credit Losses	Fair Value
Foreign government obligations											
Supranational debt											
U.S. debt											
U.S. government obligations											
Total											

	As of December 31, 2023				
	Amortized Cost	Unrealized Gains	Unrealized Losses	Allowance for Credit Losses	Fair Value
Foreign government obligations	$ 65,202	$ —	$ 13,963	$ 10	$ 51,229
Supranational debt	17,688	—	2,349	—	15,339
U.S. debt	146,484	—	33,129	29	113,326
U.S. government obligations	24,460	—	6,039	5	18,416
Total	$ 253,834	$ —	$ 55,480	$ 44	$ 198,310

As of June 30, 2024 September 30, 2024, the contractual maturities of these securities were between 7 6 years and 15 years.

4. Consolidated Balance Sheet Details

Accounts receivable trade, net

Accounts receivable trade, net consisted of the following at June 30, 2024 September 30, 2024 and December 31, 2023 (in thousands):

	June 30, 2024	December 31, 2023	September 30, 2024	December 31, 2023
Accounts receivable trade, gross				
Allowance for credit losses				
Accounts receivable trade, net				

Inventories

Inventories consisted of the following at June 30, 2024 September 30, 2024 and December 31, 2023 (in thousands):

	June 30, 2024	December 31, 2023	September 30, 2024	December 31, 2023
Raw materials				
Work in process				

Finished goods				
Inventories				
Inventories – current				
Inventories – noncurrent				

Other current assets

Other current assets consisted of the following at June 30, 2024 September 30, 2024 and December 31, 2023 (in thousands):

	June 30, 2024	December 31, 2023	September 30, 2024	December 31, 2023
Spare maintenance materials and parts				
Indirect tax receivables				
Prepaid expenses				
Operating supplies				
Prepaid income taxes				
Insurance receivable for accrued litigation (1)				
Restricted cash				
Derivative instruments (2)				
Other				
Other current assets				

(1) See Note 10. “Commitments and Contingencies” to our condensed consolidated financial statements for discussion of our legal proceedings.

(2) See Note 6. “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 June 30, 2024 September 30, 2024 and December 31, 2023 (in thousands):

	June 30, 2024	December 31, 2023	September 30, 2024	December 31, 2023
Land				
Buildings and improvements				
Machinery and equipment				
Office equipment and furniture				
Leasehold improvements				
Construction in progress				
Property, plant and equipment, gross				
Accumulated depreciation				
Property, plant and equipment, net				

Depreciation of property, plant and equipment was $93.4 million $107.1 million and $180.1 million $287.2 million for the three and six nine months ended June 30, 2024 September 30, 2024, respectively, and $76.9 million $80.7 million and $142.8 million $223.5 million for the three and six nine months ended June 30, 2023 September 30, 2023, respectively.

Other assets

Other assets consisted of the following at June 30, 2024 September 30, 2024 and December 31, 2023 (in thousands):

	June 30, 2024	December 31, 2023	September 30, 2024	December 31, 2023
Advance payments for raw materials				
Lease assets (1)				
Income tax receivables				
Prepaid expenses				

Project assets
Restricted cash equivalents
Restricted cash
Restricted cash equivalents
Other (2)
Other assets

(1) See Note 7. “Leases” to our condensed consolidated financial statements for discussion of our lease arrangements.

(2) In November 2023, First Solar entered into a power purchase agreement with Cleantech Solar (“Cleantech”), a leading provider of renewable energy solutions in India and Southeast Asia. Under the agreement, Cleantech plans to construct certain photovoltaic (“PV”) solar and wind generating assets, which are expected to supply electricity to our manufacturing facility in India.

In February During 2024, we purchased an ownership interest interests in a subsidiary two subsidiaries of Cleantech for $3.0 $7.9 million. This subsidiary owns These subsidiaries own certain of the generation assets that are expected to supply our facility, and we account for our investment investments in the subsidiary under these subsidiaries using the equity method of accounting. method. During the six nine months ended June 30, 2024 September 30, 2024, we recognized $27.3 million of revenue of $19.0 million for from module sales of 75 108 megawatts to this subsidiary. these subsidiaries. As of September 30, 2024, we had also received advance payments of $1.1 million from one of these subsidiaries for future module sales.

Accrued expenses

Accrued expenses consisted of the following at June 30, 2024 September 30, 2024 and December 31, 2023 (in thousands):

	June 30, 2024	December 31, 2023	September 30, 2024	December 31, 2023
Accrued property, plant and equipment				
Accrued freight				
Product warranty liability (1)				
Accrued inventory				
Accrued compensation and benefits				
Accrued other taxes				
Accrued compensation and benefits				
Accrued interest				
Product warranty liability (1)				
Other				
Accrued expenses				

(1) See Note 10. “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 June 30, 2024 September 30, 2024 and December 31, 2023 (in thousands):

	June 30, 2024	December 31, 2023	September 30, 2024	December 31, 2023
Accrued litigation (1)				
Lease liabilities (2)				
Derivative instruments (3)				
Contingent consideration (4)				
Other				
Other current liabilities				

(1) See Note 10. “Commitments and Contingencies” to our condensed consolidated financial statements for discussion of our legal proceedings.

(2) See Note 7. “Leases” to our condensed consolidated financial statements for discussion of our lease arrangements.

(3) See Note 6. “Derivative Financial Instruments” to our condensed consolidated financial statements for discussion of our derivative instruments.

(4) See Note 10. “Commitments and Contingencies” to our condensed consolidated financial statements for discussion of our contingent consideration arrangements.

Other liabilities

Other liabilities consisted of the following at June 30, 2024 September 30, 2024 and December 31, 2023 (in thousands):

	June 30, 2024	December 31, 2023	September 30, 2024	December 31, 2023
Lease liabilities (1)				
Deferred tax liabilities, net				
Other taxes payable				
Product warranty liability (2)				
Contingent consideration (3)				
Other				
Other liabilities				

(1) See Note 7. “Leases” to our condensed consolidated financial statements for discussion of our lease arrangements.

(2) See Note 10. “Commitments and Contingencies” to our condensed consolidated financial statements for discussion of our “Product Warranties.”

(3) See Note 10. “Commitments and Contingencies” to our condensed consolidated financial statements for discussion of our contingent consideration arrangements.

5. Government Grants

Government grants represent benefits provided by federal, state, or local governments that are not subject to the scope of Accounting Standards Codification (“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, 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 sheets as of June 30, 2024 September 30, 2024 and December 31, 2023 (in thousands):

Balance Sheet Line Item	Balance Sheet Line Item	June 30, 2024	December 31, 2023	Balance Sheet Line Item	September 30, 2024	December 31, 2023
Property, plant and equipment, net						
Other assets						

In February 2021, the state government of Tamil Nadu, India granted First Solar certain incentives associated with the construction of our first manufacturing facility in the country. 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 funding application process begins in the fiscal year following the initial period of module production and is expected to be paid in six annual installments thereafter. The timing of cash receipts is subject to the completion of audit certifications, funding applications by First Solar, and review by state government authorities. Module production in India began during the year ended December 31, 2023. We expect to submit initial funding applications in by the second half end of 2024. 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 six nine months ended June 30, 2024 September 30, 2024 and 2023 (in thousands):

		Three Months Ended June 30,		Six Months Ended June 30,						
		Three Months Ended September 30,		Nine Months Ended September 30,						
Income Statement Line Item	Income Statement Line Item	2024	2023	2024	2023	Income Statement Line Item	2024	2023	2024	2023

Cost of sales
Research and development
Production start-up

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 by the Internal Revenue Service ("IRS") 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."

In December 2023, we entered into an agreement with Fiserv, Inc. ("Fiserv") for the sale of $687.2 million of Section 45X tax credits we generated during 2023 for aggregate cash proceeds of $659.7 million. We received the full cash proceeds during the six nine months ended June 30, 2024 September 30, 2024.

6. Derivative Financial Instruments

As a global company, we are exposed in the normal course of business to various risks, including foreign currency and commodity price risks, that could affect our financial position, results of operations, and cash flows. We may 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 8. "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 June 30, 2024 September 30, 2024 and December 31, 2023 (in thousands):

		June 30, 2024	September 30, 2024
	Other Current Assets		
Derivatives designated as hedging instruments:			
Derivatives designated as hedging instruments:			
Derivatives designated as hedging instruments:			
Commodity swap contracts			
Commodity swap contracts			
Commodity swap contracts			
Total derivatives designated as hedging instruments			
Total derivatives designated as hedging instruments			
Total derivatives designated as hedging instruments			
Derivatives not designated as hedging instruments:			
Derivatives not designated as hedging instruments:			
Derivatives not designated as hedging instruments:			
Foreign exchange forward contracts			
Foreign exchange forward contracts			
Foreign exchange forward contracts			
Total derivatives not designated as hedging instruments			
Total derivatives not designated as hedging instruments			
Total derivatives not designated as hedging instruments			
Total derivative instruments			
Total derivative instruments			
Total derivative instruments			

December 31, 2023

	Other Current Assets	Other Current Liabilities
Derivatives designated as hedging instruments:		
Commodity swap contracts	$ —	$ 344
Total derivatives designated as hedging instruments	$ —	$ 344
Derivatives not designated as hedging instruments:		
Foreign exchange forward contracts	$ 1,778	$ 1,400
Total derivatives not designated as hedging instruments	$ 1,778	$ 1,400
Total derivative instruments	$ 1,778	$ 1,744

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 six nine months ended June 30, 2024 September 30, 2024 and 2023 (in thousands):

	Commodity Swap Contracts
Balance as of December 31, 2023	$ (1,493)
Amounts recognized in other comprehensive income (loss)	(873) (1,094)
Amount reclassified to cost of sales	1,495 1,715
Balance as of June 30, 2024 September 30, 2024	$ (871) (872)
Balance as of December 31, 2022	$ (7,242)
Amounts recognized in other comprehensive income (loss)	(984) (962)
Amount reclassified to cost of sales	4,665 5,576
Balance as of June 30, 2023 September 30, 2023	$ (3,561) (2,628)

The following table presents the effect of derivative instruments not designated as hedges on our condensed consolidated statements of operations for the three and six nine months ended June 30, 2024 September 30, 2024 and 2023 (in thousands):

			Amount of Loss Recognized in Income Statement								
			Three Months Ended June 30,		Six Months Ended June 30,						
			Amount of Gain (Loss) Recognized in Income Statement								
			Three Months Ended September 30,		Nine Months Ended September 30,						
	Income Statement Line Item	Income Statement Line Item	2024	2023	2024	2023	Income Statement Line Item	2024	2023	2024	2023
Foreign exchange forward contracts											

Foreign Currency Risk

Transaction Exposure and Economic Hedging

Many of our subsidiaries have assets and liabilities (primarily cash, receivables, deferred taxes, payables, accrued expenses, lease liabilities, 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. 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 June 30, 2024 September 30, 2024 and December 31, 2023, 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):

	June September 30, 2024		
Transaction	Currency	Notional Amount	USD Equivalent
Sell	Canadian dollar	CAD 4.2	$3.1
Purchase	Euro	€148.1 155.5	$158.5 173.6
Sell	Euro	€15.7 8.6	$16.8 9.6
Purchase	Indian rupee	INR 7,710.0 18,055.0	$92.4 215.7
Sell	Indian rupee	INR 72,554.5 83,157.0	$869.9 993.3
Purchase	Japanese yen	¥1,464.0	$10.3
Sell	Japanese yen	¥563.6	$3.5 4.0
Purchase	Malaysian ringgit	MYR 186.0 193.0	$39.4 46.8
Sell	Malaysian ringgit	MYR 12.4 17.0	$2.6 4.1
Sell	Mexican peso	MXN 34.6	$1.9 1.8
Purchase	Singapore dollar	SGD 25.8 14.1	$19.0 11.0
Sell	Singapore dollar	SGD 18.8 19.7	$13.9 15.4

	December 31, 2023		
Transaction	Currency	Notional Amount	USD Equivalent
Sell	Canadian dollar	CAD 4.2	$3.2
Sell	Chilean peso	CLP 1,372.6	$1.6
Purchase	Euro	€98.3	$108.7
Sell	Euro	€14.1	$15.6
Sell	Indian rupee	INR 62,967.4	$756.9
Purchase	Japanese yen	¥1,053.6	$7.5
Sell	Japanese yen	¥705.2	$5.0
Purchase	Malaysian ringgit	MYR 160.7	$35.0
Sell	Mexican peso	MXN 34.6	$2.0
Purchase	Singapore dollar	SGD 6.5	$4.9

Commodity Price Risk

From time to time, 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 entitled 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.

During the six nine months ended June 30, 2024 September 30, 2024, we entered into various commodity swap contracts to hedge a portion of our forecasted cash flows for purchases of steel between April 2024 and December 2024. Such swaps had an aggregate initial notional value based on short tons of forecasted steel purchases, equivalent to $7.6 million, and entitle us to receive the price based on the U.S. Midwest Hot-Rolled Coil Steel Index while requiring us to pay certain fixed prices. The notional amount of the commodity swap contracts proportionately adjusts with forecasted purchases of steel. As of June 30, 2024 September 30, 2024, the notional value associated with these contracts was $3.2 $0.2 million.

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 June 30, 2024 September 30, 2024 and December 31, 2023. In the following 12 months, we expect to reclassify into earnings $0.9 million of net unrealized losses related to these commodity swap contracts that are included in “Accumulated other comprehensive loss” at June 30, 2024 September 30, 2024 as we realize the earnings effects of the related forecasted transactions.

7. Leases

Our lease arrangements include land associated with our corporate and administrative offices, warehouses, land for our 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 six nine months ended June 30, 2024 September 30, 2024 and 2023, and as of June 30, 2024 September 30, 2024 and December 31, 2023 (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,		Three Months Ended September 30,		Nine Months Ended September 30,	
	2024	2023	2024	2023	2024	2023	2024	2023
Finance lease cost:								
Amortization of right-of-use assets	$ 120	$ —	$ 236	$ —	$ 281	$ —	$ 517	$
Interest on lease liabilities	254	—	484	—	426	—	910	
Operating lease cost	3,228	3,014	6,449	5,951	3,749	2,980	10,198	
Variable lease cost	723	1,121	1,432	2,016	776	512	2,208	
Short-term lease cost	294	98	478	168	208	150	686	
Total lease cost	$ 4,619	$ 4,233	$ 9,079	$ 8,135	$ 5,440	$ 3,642	$ 14,519	$

Cash paid for amounts included in the measurement of:		
Operating lease liabilities	$ 6,123	$ 5,721
Finance lease liabilities	110	—
Lease assets obtained in exchange for:		
Operating lease liabilities		

Operating lease liabilities			
Operating lease liabilities	$ 532	$ 1,080	
Finance lease liabilities / Finance lease liabilities	3,428	—	Finance lease liabilities

		June 30, 2024								
		June 30, 2024								
		June 30, 2024		December 31, 2023						
		September 30, 2024								
		September 30, 2024								
		September 30, 2024		December 31, 2023						
		Operating Leases	Operating Leases	Finance Leases	Operating Leases		Finance Leases	Operating Leases	Finance Leases	O
Lease assets	Lease assets	$ 79,593	$ 20,241	$ 84,419	$ 17,049	Lease assets	$ 117,909	$ 29,760	$ 84,419	$
Lease liabilities – current	Lease liabilities – current	10,272	534	10,307	51	Lease liabilities – current	12,101	1,212	10,307	
Lease liabilities – noncurrent	Lease liabilities – noncurrent	31,846	20,382	36,662	17,063	Lease liabilities – noncurrent	69,465	29,783	36,662	
Weighted-average remaining lease term										
Weighted-average remaining lease term										
Weighted-average remaining lease term		4 years	36 years	5 years	40 years		9 years	28 years	5 years	y
Weighted-average discount rate	Weighted-average discount rate	5.2 %	5.9 %	5.2 %	5.4 %	Weighted-average discount rate	5.5 %	6.6 %	5.2 %	

As of June 30, 2024 September 30, 2024, the future payments associated with our lease liabilities were as follows (in thousands):

	Operating Leases	Operating Leases	Finance Leases	Operating Leases	Finance Leases
Remainder of 2024					
2025					
2026					
2027					
2028					
2029					
Thereafter					
Total future payments					
Less: interest					
Total lease liabilities					

8. 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 June 30, 2024 September 30, 2024 and December 31, 2023, 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 June 30, 2024 September 30, 2024 and December 31, 2023, our marketable securities consisted of foreign debt, U.S. debt, 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 June 30, 2024 September 30, 2024 and December 31, 2023, 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 June 30, 2024 September 30, 2024 and December 31, 2023, 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				Fair Value Measurements at Reporting Date Using		
	June 30, 2024	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	September 30, 2024	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets:								
Cash equivalents:								
Cash equivalents:								
Cash equivalents:								
Money market funds								
Money market funds								
Money market funds								
Restricted cash equivalents:								
Money market funds								
Money market funds								
Money market funds								
Marketable securities:								
U.S. debt								
U.S. debt								
U.S. debt								
Time deposits								
Restricted marketable securities								
Derivative assets								
Total assets								
Liabilities:								

Derivative liabilities

Derivative liabilities

Derivative liabilities

		Fair Value Measurements at Reporting Date Using		
	December 31, 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	$ 1,105,684	$ 1,105,684	$ —	$ —
Restricted cash equivalents:				
Money market funds	6,192	6,192	—	—
Marketable securities:				
Foreign debt	34,895	—	34,895	—
U.S. debt	44,089	—	44,089	—
Time deposits	76,511	76,511	—	—
Restricted marketable securities	198,310	—	198,310	—
Derivative assets	1,778	—	1,778	—
Total assets	$ 1,467,459	$ 1,188,387	$ 279,072	$ —
Liabilities:				
Derivative liabilities	$ 1,744	$ —	$ 1,744	$ —

Fair Value of Financial Instruments

At June 30, 2024 September 30, 2024 and December 31, 2023, the carrying values and fair values of our financial instruments not measured at fair value were as follows (in thousands):

	June 30, 2024		December 31, 2023		September 30, 2024	December 31, 2023		
	Carrying Value	Fair Value	Carrying Value	Fair Value	Carrying Value	Fair Value	Carrying Value	Fair Value
Assets:	Assets:			Assets:				
Government grants receivable - noncurrent								
Liabilities:								
Long-term debt, including current maturities (1)								
Long-term debt, including current maturities (1)								
Long-term debt, including current maturities (1)								

(1) Excludes unamortized issuance costs and debt arrangements with an original maturity of less than one year.

The carrying values in our condensed consolidated balance sheets of our current trade accounts receivable, restricted cash, current government grants receivable, accounts payable, accrued expenses, and debt arrangements with an original maturity of less than one year 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 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.

9. Debt

Our debt arrangements consisted of the following at June 30, 2024 September 30, 2024 and December 31, 2023 (in thousands):

						Balance (USD)		
Loan Agreement	**Loan Agreement**	**Currency**	**June 30, 2024**	**December 31, 2023**	**Loan Agreement**	**Currency**	**September 30, 2024**	**December 31, 2023**
Revolving Credit Facility								
India Credit Facility								
India JPM Working Capital Facility								
India HSBC Working Capital Facility								
India Citibank Working Capital Facility								
Total debt principal								
Less: unamortized issuance costs								
Total debt								
Less: current portion								
Noncurrent portion								

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. Borrowing under the Revolving Credit Facility bears 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), 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 June 30, 2024 September 30, 2024 and December 31, 2023, we had no outstanding debt 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 (“FSISV”), our indirect wholly-owned subsidiary, entered into a finance agreement (the “India Credit Facility”) with the U.S. International Development Finance Corporation for aggregate borrowing 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 August 2024 through the facility’s expected maturity in August 2029. The India Credit Facility is guaranteed by First Solar, Inc.

India JPM Working Capital Facility

In December 2022, FSISV entered into a working capital facility agreement (the “India JPM Working Capital Facility”) with JPMorgan Chase Bank, N.A. for the issuance of bank guarantees, bonds, and other similar forms of security. During 2023, the India JPM Working Capital Facility was amended to include certain working capital loans of up to INR 6.2 billion ($74.8 million). The outstanding balance matures in the first quarter of 2025. The India JPM Working Capital Facility is guaranteed by First Solar, Inc. As of June 30, 2024, there was no balance outstanding on the India JPM Working Capital Facility.

India HSBC Working Capital Facility

In February 2024, FSISV entered into a working capital facility agreement (the "India HSBC Working Capital Facility") with the Hongkong and Shanghai Banking Corporation Limited, which provides certain working capital loans of up to INR 8.2 billion ($98.4 million). The outstanding balance matures in the third first quarter of 2024. 2025. The India HSBC Working Capital Facility is guaranteed by First Solar, Inc.

Interest Rates India Citibank Working Capital Facility

As In August 2024, FSISV entered into a working capital facility agreement (the "India Citibank Working Capital Facility") with Citibank, N.A., which provides certain working capital loans of June 30, 2024, up to INR 4.5 billion ($53.8 million). The outstanding balance matures in the borrowing rates for our outstanding debt arrangements were as follows:

Loan Agreement	Interest Rate Description	Interest Rate
India Credit Facility	U.S. Treasury Constant Maturity Yield plus 1.75%	5.57%
India HSBC Working Capital Facility (1)	India Treasury bill rate plus 1.5% to 1.6%	8.36%

(1) first quarter of 2025. The weighted-average interest rate for our outstanding short-term debt arrangements was 8.36% as of June 30, 2024. India Citibank Working Capital Facility is guaranteed by First Solar, Inc.

10. 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 June 30, 2024 September 30, 2024, the issued and outstanding amounts and available capacities under these commitments were as follows (in millions):

	Issued and Outstanding	Issued and Outstanding	Available Capacity	Issued and Outstanding	Available Capacity
Revolving Credit Facility (1)					
Bilateral facilities (2)					
Surety bonds					

(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, $9.2 million $9.3 million was secured with cash.

Product Warranties

When we recognize revenue for sales of modules, we accrue liabilities for the estimated future costs of meeting our limited warranty obligations. 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. technology and other factors. 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 six nine months ended June 30, 2024 September 30, 2024 and 2023 were as follows (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,					
	Three Months Ended September 30,		Nine Months Ended September 30,					
	2024	2023	2024	2023	2024	2023	2024	2023
Product warranty liability, beginning of period								
Accruals for new warranties issued								
Settlements								
Changes in estimate of product warranty liability								
Product warranty liability, end of period								

Current portion of warranty liability	
Noncurrent portion of warranty liability	

We have identified manufacturing issues affecting certain Series 7 modules manufactured in 2023 and 2024 that may cause the modules to experience premature power loss once installed in the field. The ultimate loss we will incur for these manufacturing issues will depend on the extent of the premature power loss that is experienced in relation to the obligations under our limited product warranties, as well as any additional commitments we may make to remediate the affected modules. Based on currently available information and certain assumptions and estimates, we believe a reasonable estimate of the aggregate losses related to these manufacturing issues will range from approximately $50 million to $100 million. At this time, no individual amount within that range is a better estimate than any other amount. Accordingly, as of September 30, 2024, we increased our product warranty liability by the low end of the range, which we recorded as a reduction to revenue. The estimated range set forth above was based on our evaluation of the currently available information, including select samples of module performance data from several locations, the estimated number of affected modules, and projections of probable costs to remediate the issues. As additional information becomes available to us, our estimate of the aggregate losses related to these manufacturing issues may change, and any change in estimate may also result in a change to our product warranty liability.

During the three months ended September 30, 2023, we revised our warranty estimate based on updated information regarding our warranty claims, which reduced our module 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.

Indemnifications

In certain limited circumstances, we have provided indemnifications to customers or other parties under which we are contractually obligated to compensate such parties for losses they suffer resulting from a breach of a representation, warranty, or covenant; the resolution of specific matters associated with a project's development or construction; guarantees of a third party's payment or performance obligations; or any disallowance or lack of the right to claim all or any portion of certain tax credits. For contracts that have such indemnification provisions, we initially recognize a liability under ASC 460 for the estimated premium that would be required by a guarantor to issue the same indemnity in a standalone arm's-length transaction with an unrelated party. We may base these estimates on the cost of insurance or other instruments that cover the underlying risks being indemnified and may purchase such instruments to mitigate our exposure to potential indemnification payments. We subsequently measure such liabilities at the greater of the initially estimated premium or the contingent liability required to be recognized under ASC 450. We recognize any indemnification liabilities as a reduction of earnings associated with the related transaction.

After an indemnification liability is recorded, we derecognize such amount pursuant to ASC 460 depending on the nature of the indemnity, which derecognition typically occurs upon expiration or settlement of the arrangement, and any contingent aspects of the indemnity are accounted for in accordance with ASC 450. As of June 30, 2024 September 30, 2024 and December 31, 2023, we accrued $2.5 million and $3.3 million of current indemnification liabilities, respectively. As of June 30, 2024 September 30, 2024, the maximum potential amount of future payments under our indemnifications was $688.8 million.

Contingent Consideration

As part of our acquisition of Evolar AB ("Evolar") in May 2023, 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. As of December 31, 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. During the three nine months ended June 30, 2024 September 30, 2024, we paid $7.5 million of contingent consideration to the selling shareholders, and $11.0 million remains in our long-term liabilities as of June 30, 2024 September 30, 2024.

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.

Our module collection and recycling liability was $134.8 million $139.0 million and $135.1 million as of June 30, 2024 September 30, 2024 and December 31, 2023, respectively. See Note 3. "Restricted Marketable Securities" to our condensed consolidated financial statements for more information about our arrangements for funding this liability.

Legal Proceedings

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. In July 2023, the arbitration panel entered an interim award to Southern for $35.6 million, which was paid during the year ended December 31, 2023. As a result, we recognized a loss for such interim award in our results of operations for the year ended December 31, 2023. The

final arbitration award, which did not change the results of the interim award, was signed on November 6, 2023. On February 2, 2024, First Solar commenced an action in the New York County Supreme Court seeking to vacate certain aspects of the final award. On May 6, 2024, such action was denied. First Solar has elected not to appeal, and considers this matter closed.

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 ("Plaintiff"), the owner of a company called Trabant Solar, Inc. In January 2023, we were notified by two of our customers that Plaintiff 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. In November 2023, the United States Patent Trial and Appeal Board declined to hear the First Solar IPR. In July 2024, Plaintiff's counsel filed a motion seeking to withdraw as counsel. The court granted the motion and issued a 45-day stay of all proceedings while Plaintiff seeks new representation. In September 2024, Plaintiff filed a motion seeking a stay of all proceedings for 90 days, claiming health issues. The court granted the motion and issued an additional stay of all proceedings until January 2025. Because all case discovery has been stayed, until September 24, 2024, 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. The plaintiff and defendant have appealed and cross appealed varying aspects of the verdict and the remittitur. Accordingly, due to the uncertainty surrounding the multiple decisions and appeals, as of June 30, 2024 September 30, 2024, 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 June 30, 2024 September 30, 2024. 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 challenging the initial verdict in an appellate court, and the plaintiff is cross appealing from the decision to reduce the award, among other issues, stemming from the trial. The parties are awaiting a briefing schedule from the Appellate Court.

On September 29, 2023 and June 5, 2024, the Company received subpoenas from the Division of Enforcement of the SEC seeking documents and information 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.

11. Revenue from Contracts with Customers

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 of the modules to the location specified in the terms of the underlying contracts. Such contract. Our customer contracts may generally contain provisions that require us to pay the customer liquidated damages if we fail to ship or deliver modules by scheduled dates. For certain contracts, we may also be required to pay liquidated damages dates or 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. Our customer contracts also generally contain provisions that entitle us to a termination payment if the customer defaults on its contractual obligations and we terminate the contract. We account for such terminations as contract modifications in the period in which the contract is terminated. We recognize revenue for bill-and-hold arrangements at the point in time the customer obtains control of the modules when all of the following criteria have been met: (i) the arrangement is substantive, (ii) the modules are segregated and identified separately as belonging to the customer, (iii) the modules are ready for physical transfer to the customer, and (iv) we do not have the ability to use the modules or direct them to another customer.

The following table reflects the changes in our contract liabilities, which we classify as "Deferred revenue," for the six nine months ended June 30, 2024 September 30, 2024 (in thousands):

	June 30, 2024	December 31, 2023	Six Month Change	
Deferred revenue	$ 1,948,348	$ 2,005,183	$ (56,835)	(3)%

	September 30, 2024	December 31, 2023	Nine Month Change	
Deferred revenue	$ 1,965,381	$ 2,005,183	$ (39,802)	(2)%

During the six nine months ended June 30, 2024 September 30, 2024, our contract liabilities decreased by $56.8 million $39.8 million primarily due to the recognition of revenue for sales of solar modules for which payment was received in prior years. Additionally, we restructured the payment security for one of our customer contracts, which resulted in the return of previously received advance payments in exchange for a letter of credit. These decreases were years, partially offset by advance payments received in the current year for future sales of solar modules. During the six nine months ended June 30, 2024 September 30, 2024 and 2023, we recognized revenue of $221.3 $284.0 million and $215.5 $320.3 million, respectively, that was included in the corresponding contract liability balance at the beginning of the periods.

As of June 30, 2024 September 30, 2024, we had entered into contracts with customers for the future sale of 74.6 72.8 GW of solar modules for an aggregate transaction price of $22.3 billion $21.7 billion, which we expect to recognize as revenue through 2030 as we transfer control of the modules to the customers. Such aggregate This volume and transaction price exclude contracts with customers in India for which payment has not been fully secured. This transaction price also 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 defined thresholds, (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.

See Note 16. "Segment Reporting" for the disaggregation of revenue by reportable segment.

12. Share-Based Compensation

The following table presents share-based compensation expense recognized in our condensed consolidated statements of operations for the three and six nine months ended June 30, 2024 September 30, 2024 and 2023 (in thousands):

	Three Months Ended June 30,			Six Months Ended June 30,					
	Three Months Ended September 30,			Nine Months Ended September 30,					
	2024	2024	2023	2024	2023	2024	2023	2024	2023
Cost of sales									
Selling, general and administrative									
Research and development									
Production start-up									
Total share-based compensation expense									

As of June 30, 2024 September 30, 2024, we had $44.1 $35.3 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 1.2 years.

In March 2020 and May 2021, the compensation committee of our board of directors approved grants of performance units ("PU" or "PUs") for key executive officers to be earned over a multi-year performance period, periods, which ended in December 2022. 2022 and December 2023, respectively. Vesting of the 2020 and 2021 grants of PUs was contingent upon the relative specific attainment targets of target each grant, which targets include metrics such as contracted revenue, module wattage, and return on capital, cost per watt, incremental average selling price, and operating income metrics. In March 2023, the compensation committee certified the achievement of the vesting conditions applicable to the

2020 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 grants of PUs for key executive officers to be earned over a multi-year performance period, which ended in December 2023. Vesting of the 2021 grants of PUs was contingent upon the relative attainment of target contracted revenue, cost per watt, incremental average selling price, and operating income metrics. In February 2024, the compensation committee certified the achievement of the vesting conditions applicable to the 2021 grants, which approximated the maximum level of performance. Accordingly, each participant received one share of common stock for each vested PU granted, net of any tax withholdings.

In March 2022, March 2023, and March 2024, the compensation committee approved additional grants of PUs for key executive officers. Such officers; such grants are expected to be earned over a multi-year performance period ending in December 2024. 2024, December 2025, and December 2026, respectively. Vesting of the 2022, grants of PUs is contingent upon the relative attainment of target contracted revenue, cost per watt, 2023, 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.

In March 2024, 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 2026. Vesting of the 2024 grants of PUs is contingent upon the relative specific attainment targets of target each grant, which targets include metrics such as contracted revenue, cost per watt, return on capital, production, incremental average selling price, 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.

13. Income Taxes

The Inflation Reduction Act. 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 under Section 45X of the IRC. The provisions of the IRA are generally effective for tax years beginning after 2022. Certain developments to technical guidance and regulations include the following:

- In May 2023, the U.S. Treasury Department and the IRS issued initial guidance on various sections of the IRC, including Section 45X.
- In December 2023, the U.S. Treasury Department and the IRS issued a notice of proposed rulemaking and public hearing providing initial guidance confirming certain key aspects of the Section 45X credit.
- In March 2024, the U.S. Treasury Department and the IRS issued final regulations on the direct payment election under Section 6417 of the IRC. The final regulations apply to tax years ending on or after March 11, 2024, but taxpayers may choose to apply the rules in the final regulations in taxable years ending before March 11, 2024, provided the final regulations are applied in their entirety and in a consistent manner. The final regulations mostly adopted and confirmed the proposed regulations previously issued in June 2023.
- In April 2024, the U.S. Treasury Department and the IRS issued final regulations on the elective transfer provisions under Section 6418 of the IRC. The final regulations apply to taxable years ending on or after April 30, 2024, but taxpayers may choose to apply the rules in the final regulations in taxable years ending before April 30, 2024, provided the final regulations are applied in their entirety and in a consistent manner. The final regulations mostly adopted and confirmed the proposed regulations previously issued in June 2023.

Given the complexities of the IRA, which is pending additional technical guidance and final regulations from the U.S. Treasury Department and the IRS, we expect to continue to monitor these developments and evaluate their potential future impact to our results of operations.

Foreign tax credit regulations. 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. In December 2023, the U.S. Treasury Department issued Notice 2023-80, which extends this relief period until future guidance is issued.

Pillar Two. In December 2021, the Organization for Economic Co-operation and Development released model rules for a new global minimum tax framework (“Pillar Two”). Certain governments in countries in which we operate have enacted local Pillar Two legislation, with an effective date from January 1, 2024. We currently do not expect Pillar Two to have a material impact on our 2024 financial statements. As these legislative changes develop and expand, we expect to continue to monitor the changes and evaluate their potential impact to our results of operations.

Our effective tax rate was 7.4% and 4.9% 6.4% for the six nine months ended June 30, 2024 September 30, 2024 and 2023, respectively. The increase in our 2023. Although the effective tax rate was primarily driven by consistent across both periods, we identified certain primary drivers, which included (i) lower excess tax benefits associated with share-based compensation. compensation and (ii) a higher inclusion percentage of Global Intangible Low-Taxed Income, net of the applicable Section 250 deduction, partially offset by (iii) higher income earned in low tax jurisdictions. 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.

During the three nine months ended June 30, 2024 September 30, 2024, we reversed our position to indefinitely reinvest the accumulated earnings of a foreign subsidiary and recorded discrete tax expense of approximately $6 million. There were no other changes to our indefinite reinvestment assertions during the period.

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 has been granted a long-term tax incentive that generally provides a full exemption from Vietnamese income tax 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 research and development (“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, the United States, and the State States of Georgia. Georgia and Tennessee. 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.

14. Net Income per Share

The calculation of basic and diluted net income per share for the three and six nine months ended June 30, 2024 September 30, 2024 and 2023 was as follows (in thousands, except per share amounts):

		Three Months Ended June 30,		Six Months Ended June 30,					
		Three Months Ended September 30,		Nine Months Ended September 30,					
	2024	2024	2023	2024	2023	2024	2023	2024	2023
Basic net income per share									
Numerator:									
Numerator:									
Numerator:									
Net income									
Net income									
Net income									
Denominator:									
Weighted-average common shares outstanding									
Weighted-average common shares outstanding									
Weighted-average common shares outstanding									
Diluted net income per share									
Diluted net income per share									

Diluted net income per share	
Denominator:	
Denominator:	
Denominator:	
Weighted-average common shares outstanding	
Weighted-average common shares outstanding	
Weighted-average common shares outstanding	
Effect of restricted stock and performance units	
Weighted-average shares used in computing diluted net income per share	
Net income per share:	
Net income per share:	
Net income per share:	
Basic	
Basic	
Basic	
Diluted	

The following table summarizes the potential There were no anti-dilutive shares of common stock that were excluded from the computation of diluted net income per share for the three and six nine months ended June 30, 2024 September 30, 2024 and 2023 as such shares would have had an anti-dilutive effect (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2024	2023	2024	2023
Anti-dilutive shares	—	—	—	24

2023.

15. Accumulated Other Comprehensive Loss

The following table presents the changes in accumulated other comprehensive loss, net of tax, for the six nine months ended June 30, 2024 September 30, 2024 (in thousands):

	Foreign Currency Translation Adjustment	Foreign Currency Translation Adjustment	Unrealized Gain (Loss) on Marketable Securities and Restricted Marketable Securities	Unrealized Gain (Loss) on Derivative Instruments	Total	Foreign Currency Translation Adjustment	Unrealized Gain (Loss) on Marketable Securities and Restricted Marketable Securities	Unrealized Gain (Loss) on Derivative Instruments	Total
Balance as of December 31, 2023									
Other comprehensive loss before reclassifications									
Other comprehensive (loss) income before reclassifications									
Amounts reclassified from accumulated other comprehensive loss									
Net tax effect									
Net other comprehensive (loss) income									
Balance as of June 30, 2024									
Balance as of September 30, 2024									

The following table presents the pretax amounts reclassified from accumulated other comprehensive loss into our condensed consolidated statements of operations for the three and six nine months ended June 30, 2024 September 30, 2024 and 2023 (in thousands):

Comprehensive Income Components	Comprehensive Income Components	Income Statement Line Item	Three Months Ended June 30,		Six Months Ended June 30,		Comprehensive Income Components	Comprehensive Income Components	Income Statement Line Item	Three Months Ended September 30,		Nine Months Ended September 30,	
			2024	2023	2024	2023				2024	2023	2024	2023
Foreign currency translation adjustment:													
Foreign currency translation adjustment													
Foreign currency translation adjustment													
Foreign currency translation adjustment													
Foreign currency translation adjustment													
Total foreign currency translation adjustment													
Unrealized gain (loss) on marketable securities and restricted marketable securities													
Unrealized loss on derivative instruments:													
Commodity swap contracts													
Commodity swap contracts													
Commodity swap contracts													
Total loss reclassified													

16. 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 system developers, independent power producers, utilities, commercial and industrial companies, and other system owners and operators. 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 21. “Segment and Geographical Information” in our Annual Report on Form 10-K for the year ended December 31, 2023 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 six nine months ended June 30, 2024 September 30, 2024 and 2023 and as of June 30, 2024 September 30, 2024 and December 31, 2023 (in thousands):

	Three Months Ended June 30, 2024			Three Months Ended June 30, 2023			Three Months Ended September 30, 2024			Three Months Ended September 30, 2023		
	Modules	Other	Total	Modules	Other	Total	Modules	Other	Total	Modules	Other	Total
Net sales												
Gross profit												
Gross profit (loss)												
Depreciation and amortization expense												

	Six Months Ended June 30, 2024			Six Months Ended June 30, 2023			Nine Months Ended September 30, 2024			Nine Months Ended September 30, 2023		
	Modules	Other	Total	Modules	Other	Total	Modules	Other	Total	Modules	Other	Total
Net sales												
Gross profit												
Gross profit (loss)												
Depreciation and amortization expense												

June 30, 2024	
June 30, 2024	
June 30, 2024	December 31, 2023
September 30, 2024	

		September 30, 2024											
		September 30, 2024		December 31, 2023									
	Modules	Modules	Other	Total	Modules	Other	Total	Modules	Other	Total	Modules	Other	Total
Goodwill													

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 and anticipated claims thereunder, solar module technology and cost reduction roadmaps, product reliability, investments, and capital expenditures; our ability to successfully integrate an acquired business; 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 the construction of new manufacturing facilities in the United States and related increases 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 the report 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;
- 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 and realize the potential benefits of strategic acquisitions and investments;
- 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;
- our ability to avoid manufacturing interruptions, including during the ramp of our 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 the potential impact on the Company's business, financial condition, and results of operations;
- 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;
- evolving corporate governance and public disclosure regulations and expectations, including with respect to environmental, social, and governance matters;
- 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 or otherwise as required by external laws and regulation;
- supply chain disruptions;
- our ability to protect our intellectual property;
- our ability to prevent and/or minimize the impact of cybersecurity incidents or information security breaches;
- our continued investment in R&D;
- the supply and price of components and raw materials, including CdTe;
- our ability to attract, train, retain and successfully integrate key talent into our team; and
- all other matters discussed in Item 1A. “Risk Factors” of our Annual Report on Form 10-K for the year ended December 31, 2023, 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 business, 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 responsibly produced eco-efficient 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 and lower-water alternative to conventional crystalline silicon PV solar modules, and the smallest environmental footprint in the industry. 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. Our PV solar modules are produced using a fully integrated, continuous process that does not rely on Chinese crystalline silicon supply chains.

We are the world’s largest thin film PV solar module manufacturer and the largest PV solar module manufacturer in the Western Hemisphere. We recently commenced operations at our fourth manufacturing facility in the United States and are in the process of expanding our manufacturing capacity, including the construction of our fifth manufacturing facility in the United States, which includes our fourth and fifth manufacturing facilities is expected to commence operations in the second halves half of 2024 and 2025, respectively. 2025. With a global footprint that spans the United States, India, Malaysia, and Vietnam, we expect to have an annual manufacturing capacity of over 25 GW by the end of 2026.

Certain of our financial results and other key operational developments for the three months ended June 30, 2024 September 30, 2024 include the following:

- Net sales for the three months ended June 30, 2024 September 30, 2024 increased by 25% 11% to $1.0 billion $0.9 billion compared to $0.8 billion for the same period in 2023. The increase was primarily driven by an increase in the volume of modules sold to third parties and an increase termination payments associated with certain customer contract terminations in the average selling price per watt U.S. and India, partially offset by a current period reduction in revenue related to manufacturing issues affecting certain Series 7 modules manufactured in 2023 and 2024. We currently believe the primary causes of our modules. the issues have been identified and we have taken actions to address such issues.

- Gross profit as a percentage of net sales for the three months ended June 30, 2024 September 30, 2024 increased 11.1 3.2 percentage points to 49.4% 50.2% from 38.3% 47.0% for the same period in 2023. The increase in gross profit was primarily due to termination payments associated with certain customer contract terminations in the U.S. and India and a higher sales mix of modules qualifying for the advanced manufacturing production credit under Section 45X of the IRC, partially offset by a current period reduction in revenue related to manufacturing issues affecting certain Series 7 modules manufactured in 2023 and 2024 and higher utilization across our manufacturing plants, and our entitlement to a contract termination payment from one of our European customers that reduced its module demand in the current period. storage costs.

- As During the three months ended September 30, 2024, we commenced production of June 30, 2024, the Series 7 modules at our first manufacturing facility in Alabama, bringing our total installed nameplate production capacity across all our facilities was to approximately 17.6 19.4 GW. During the three months ended June 30, 2024 September 30, 2024, we produced 3.7 3.8 GW and sold 3.4 3.0 GW of solar modules. During 2024, we expect to produce between 15.6 GW and 16.0 15.9 GW and sell between 15.6 14.2 GW and 16.3 14.6 GW of solar modules.

- During the three months ended June 30, 2024, we achieved a new world record CdTe research cell conversion efficiency of 23.1%, which was certified by the U.S. Department of Energy's National Renewable Energy Laboratory.

- During the three months ended June 30, 2024, we completed certain key construction and equipment installation activities at In July 2024, our dedicated R&D innovation center in Ohio and in July 2024, the facility was formally commissioned. This R&D facility features a high-tech pilot manufacturing line, which is expected to enable the production of full-sized prototypes of thin film and tandem PV modules, supporting the implementation of our technology roadmap.

- In December 2023, we entered into an agreement with Fiserv for the sale of $687.2 million of Section 45X tax credits generated during 2023 for aggregate cash proceeds of $659.7 million. We received the full cash proceeds during the six months ended June 30, 2024.

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 or substitute for traditional forms of energy generation. Over the past decade, 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 renewable energy 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, such as grant funding provided by the U.S. Department of Energy, and tax incentives, such as tax credits available under the IRA, 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.

Supply and demand. As a result of the market opportunities described above, we recently commenced production of Series 7 modules at our first manufacturing facility in Alabama and are in the process of expanding our manufacturing capacity, including the construction of our fourth and fifth manufacturing facilities facility in the United States, which are is expected to commence operations in the second halves half of 2024 and 2025, respectively. 2025. We continue to evaluate opportunities for future expansion worldwide. 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. Further, demand for solar energy in key markets, such as the United States, India, and Europe, may be affected by the nature and extent of commitments to the renewable energy transition at the local and global levels. For example, certain large oil and gas and energy companies have experienced investor pressure to pursue returns commensurate with those currently associated with fossil fuel projects. Notwithstanding these considerations, utility and corporate demand for clean energy, and overall electric load growth, especially as a result of artificial intelligence-driven data center demand, continue to increase. In light of such market realities, we continue to advocate for industrial and trade policies that provide a level playing field for manufacturers of solar cells and modules. We also 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.

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 module manufacturers and project developers 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 declined, near-term module pricing in the United States, our primary market, remains relatively stable due, in part, to the rising demand for domestically manufactured modules as a result of the IRA.

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, customer payment terms, and/or module content attributes. 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 when applied 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 began commercial production of bifacial solar modules at certain of our manufacturing facilities in Ohio and during the three months ended June 30, 2024, delivered our first bifacial modules to customers. Our 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 lowers the operational temperature of the module, resulting in a higher energy yield.

- *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, improving 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. We currently expect to complete the lead line implementation of our CuRe technology in late 2024 and intend to begin a phased replication of the technology across our fleet in late 2025.

- *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 significantly increase the efficiency of PV modules beyond the limits of traditional single-junction devices. Our acquisition of Evolar is expected to accelerate the development of high efficiency multi-junction devices by integrating Evolar's expertise with First Solar's existing R&D capabilities.

Product efficiencies. The efficiencies gained from the vertical integration of our manufacturing model and our continued ability to reduce costs allow 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, 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 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.

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 technologies 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 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. Accordingly, 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, 2023 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 have significantly increased 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. The financial incentives provided by the IRA have also increased 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. There are currently several critical and complex aspects of the IRA pending further technical guidance and final regulations from the IRS and the 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 5. "Government Grants" and Note 13. "Income Taxes" to our condensed consolidated financial statements for discussion of our expectation of the financial benefits available to us under the IRA and developments to technical guidance and regulations, respectively.

- *United States.* In September 2023, the U.S. Department of Energy Solar Energy Technologies Office ("SETO") announced the Advancing U.S. Thin-Film Solar Photovoltaics Funding Opportunity, which provides up to $44 million for qualifying solar R&D projects related to CdTe development and the manufacturing of perovskite tandem PV products. In May 2024, SETO announced the award recipients for this funding opportunity, which included two of our R&D projects. These grants are intended to accelerate and expand domestic solar R&D to strengthen U.S. solar manufacturing and contribute to renewable energy targets.

- *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 2.2 billion), of which INR 11.8 billion ($143 141 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*. The United States currently imposes antidumping and countervailing duties ("AD/CVD" CVDs") on certain imported crystalline silicon PV cells and modules from China and Taiwan. Such AD/CVD CVDs can change over time pursuant to annual reviews conducted by the U.S. Department of Commerce ("USDOC"), and a decline in duty rates or the USDOC's failure to fully enforce U.S. AD/CVD laws could have an adverse impact on our operating results. 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 the pre-existing AD/CVD orders on China. Such duties apply to circumventing imports on or after June 6, 2024, as well as any circumventing imports prior to that date that are not used or installed on or before December 3, 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 petitions with the USDOC and the U.S. International Trade Commission ("USITC") related to aluminum extrusions from 15 countries. The USDOC and USITC have initiated investigations based on the petitions. We import certain items that appear to be within the scope of the investigations. Our operating results could be adversely impacted if the USDOC imposes duties on such imports. The USITC issued affirmative preliminary AD/CVD determinations in November 2023, and the its final AD/CVD determinations are expected to be announced on October 30, 2024. The USDOC issued preliminary antidumping and final AD determinations in May and September 2024, respectively, both of which found that our Malaysian supplier of aluminum extrusions was not dumping. The USDOC's and USITC's final determinations are expected to be announced in September 2024 and October 2024, respectively.

- *United States.* In April 2024, the American Alliance for Solar Manufacturing Trade Committee, which includes First Solar, filed a set of AD/CVD petitions with the USDOC and the USITC to impose duties on certain unfairly traded solar products from Cambodia, Malaysia, Thailand, and Vietnam. The investigations could potentially lead to the imposition of AD/CVD orders on such solar products. In June 2024, the USITC issued affirmative preliminary determinations. In early October 2024, the USDOC announced preliminary affirmative determinations in the CVD investigations, finding that silicon solar cells and panels from Cambodia, Malaysia, Thailand, and Vietnam are unfairly subsidized at rates ranging from *de minimis* to nearly 300%, depending on the particular foreign producer. The USDOC has imposed provisional CVDs accordingly. The USDOC is expected to announce preliminary determinations in the CVD and AD investigations in October 2024 and November 2024, respectively. 2024.

- *India*. The Approved List of Models and Manufacturers ("ALMM") was introduced in 2021 as a non-tariff barrier to incentivize local 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 list and its application may affect future investments in solar module manufacturing in India. In April 2024, the government of India reimposed the ALMM, thereby requiring solar project developers to procure qualifying modules from companies on the list, which includes our Indian manufacturing facility. Our operating results could be adversely impacted if the ALMM requirements are significantly relaxed to allow modules to be imported from other countries. Also in April 2024, the ALMM was amended to include specific minimum conversion efficiency thresholds for CdTe solar technologies starting at 18% for solar lighting, 18.5% for rooftop applications, and 19% for utility-scale applications.

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 commercial contract structures that provide additional consideration to us if the cost of logistics services, excluding demurrage and detention, exceeds defined thresholds. 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 to mitigate logistics costs. Additionally, our manufacturing capacity expansions are expected to bring production 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 June 30, 2024 September 30, 2024, we had entered into contracts with customers for the future sale of 74.6 72.8 GW of solar modules for an aggregate transaction price of $22.3 $21.7 billion, which we expect to recognize as revenue through 2030 as we transfer control of the modules to our customers. Such This volume and transaction price exclude contracts with customers in India for which payment has not been fully secured. This volume includes contracts for the sale of 38.4 37.3 GW of solar modules with anticipated price adjustments for future module technology improvements, including enhancements to certain energy related attributes. Based on these potential improvements, the contracted module volume as of June 30, 2024 September 30, 2024, the expected timing such improvements being incorporated into our manufacturing process, and the expected timing of module deliveries, such adjustments, if realized, could result in additional revenue of up to $0.7 billion, the majority of which would be recognized between 2025 2026 and 2028. In addition to these price adjustments, certain of our contracts with customers may include favorable price adjustments associated with sales freight in excess of defined thresholds and/or favorable or unfavorable price adjustments associated with changes to (i) certain commodity prices, (ii) the module wattage committed for delivery, and (iii) the volume of modules sold that meet certain U.S. domestic content requirements. As a result, the revenue recognized from such contracts may increase or decrease in future periods relative to the original transaction price.

We monitor our modules' expected performance through quality and reliability testing, as well as actual performance in certain field installation sites. Any declines in the expected performance attributes of our modules could adversely impact our financial results due to declines in the average selling prices of our modules and additional margin compression. For example, the recently identified manufacturing issues affecting certain Series 7 modules may adversely impact the average selling prices of our modules or the carrying value of our inventories. These manufacturing issues may also increase product warranty claims by our customers to resolve the premature power loss in affected modules. The remediation of any identified issues in our manufacturing process may result in increased costs as we resolve the identified issues. Any future manufacturing issues, including any additional commitment made by us to remediate the affected modules beyond our limited warranty, could also adversely impact our reputation, financial position, operating results, and cash flows. We may also be subject to certain other risks and uncertainties surrounding module performance as described in Item 1A. "Risk Factors – Problems with product quality or performance may cause us to incur significant and/or unexpected contractual damages and/or warranty and related expenses, damage our market reputation, and prevent us from maintaining or increasing our market share.”

We continue to increase the nameplate production capacity of our existing manufacturing facilities by improving our production throughput, increasing module wattage, and reducing manufacturing yield losses. Additionally, we are in the process of expanding our manufacturing capacity by approximately 7.6 5.8 GW, including the construction of our fourth and fifth manufacturing facilities facility in the United States, as well as capacity expansion at our existing facilities. 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, 2023.

Results of Operations

The following table sets forth our condensed consolidated statements of operations as a percentage of net sales for the three and six nine months ended June 30, 2024 September 30, 2024 and 2023:

		Three Months Ended June 30,		Six Months Ended June 30,							
		Three Months Ended September 30,		Nine Months Ended September 30,							
		2024	2024	2023	2024	2023		2024	2023	2024	2023
Net sales	Net sales	100.0 %	100.0 %	100.0 %	100.0 %	Net sales	100.0 %	100.0 %	100.0 %	100.0 %	
Cost of sales	Cost of sales	50.6 %	61.7 %	53.2 %	68.9 %	Cost of sales	49.8 %	53.0 %	52.1 %	63.0 %	
Gross profit	Gross profit	49.4 %	38.3 %	46.8 %	31.1 %	Gross profit	50.2 %	47.0 %	47.9 %	37.0 %	
Selling, general and administrative	Selling, general and administrative	4.6 %	5.7 %	5.1 %	6.6 %	Selling, general and administrative	5.2 %	6.3 %	5.2 %	6.5 %	
Research and development	Research and development	5.1 %	4.5 %	5.2 %	4.9 %	Research and development	5.7 %	5.1 %	5.4 %	5.0 %	
Production start-up	Production start-up	2.7 %	2.9 %	2.4 %	3.2 %	Production start-up	3.0 %	1.5 %	2.6 %	2.5 %	
Litigation loss	Litigation loss	— %	4.4 %	— %	2.6 %	Litigation loss	— %	— %	— %	1.6 %	
Gain on sales of businesses, net	Gain on sales of businesses, net	— %	— %	0.1 %	— %	Gain on sales of businesses, net	— %	— %	— %	— %	
Operating income	Operating income	36.9 %	20.8 %	34.1 %	13.7 %	Operating income	36.3 %	34.1 %	34.8 %	21.3 %	
Foreign currency loss, net	Foreign currency loss, net	(1.0)%	(0.6) %	(0.7) %	(0.8)%	Foreign currency loss, net	(0.6)%	(0.1)%	(0.7)%	(0.5)%	
Interest income	Interest income	2.4 %	3.1 %	2.9 %	3.7 %	Interest income	2.5 %	2.9 %	2.8 %	3.4 %	
Interest expense, net	Interest expense, net	(1.0)%	(0.2) %	(1.1) %	(0.2)%	Interest expense, net	(1.0)%	(0.5)%	(1.0)%	(0.3)%	
Other (expense) income, net		(0.1)%	0.1 %	(0.2) %	— %						
Other expense, net		(0.3)%	(0.1) %	(0.2) %	(0.1)%						
Income tax expense	Income tax expense	(2.7)%	(2.2) %	(2.6) %	(0.8)%	Income tax expense	(1.6)%	(2.8)%	(2.3)%	(1.5)%	
Net income	Net income	34.6 %	21.0 %	32.5 %	15.7 %	Net income	35.3 %	33.5 %	33.4 %	22.3 %	

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 system developers, independent power producers, utilities, commercial and industrial companies, and other system owners and operators. 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 six nine months ended June 30, 2024 September 30, 2024, 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 of the modules to the location specified in the terms of the underlying contracts. contract. 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 six nine months ended June 30, 2024 September 30, 2024 and 2023:

(Dollars in thousands)

(Dollars in thousands)

(Dollars in thousands)		**2024**		**2023**		**Three Month Change**			**2024**		**2023**		**Six Month Change**			**2024**	**2023**
Modules	Modules	$1,008,765	$	$802,237	$	$206,528	26	26 %	$1,802,199	$	$1,338,827	$	$463,372	35	35 %	Modules	$886,655
Other	Other	1,717	8,436	8,436	(6,719)	(6,719)	(80)	(80)%	2,391	20,132	20,132	(17,741)	(17,741)	(88)	(88)%	Other	
Net sales	Net sales	$1,010,482	$	$810,673	$	$199,809	25	25 %	$1,804,590	$	$1,358,959	$	$445,631	33	33 %	Net sales	$887,668

Net sales from our modules segment increased $206.5 million $86.6 million for the three months ended June 30, 2024 September 30, 2024 compared to the three months ended June 30, 2023 September 30, 2023 primarily due to a 9% increase in the volume of modules sold to third parties and termination payments of $72.3 million associated with certain customer contract terminations in the U.S. and India, partially offset by a current period reduction in revenue of approximately $50 million related to manufacturing issues affecting certain Series 7 modules manufactured in 2023 and 2024.

Net sales increased $532.2 million for the nine months ended September 30, 2024 compared to the nine months ended September 30, 2023 primarily due to a 21% increase in the volume of modules sold to third parties and an 4% increase in termination payments of $93.4 million associated with certain customer contract terminations in the average selling price per watt. Net U.S. and India, partially offset by approximately $50 million for the manufacturing issues discussed above and the recognition of contingent earnouts in the previous period for historical project sales from related to our residual business operations during the three months ended June 30, 2024 decreased $6.7 million compared to the three months ended June 30, 2023 as our residual business operations continue to wind down.

Net sales from our modules segment increased $463.4 million for the six months ended June 30, 2024 compared to the six months ended June 30, 2023 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 six months ended June 30, 2024 decreased $17.7 million compared to the six months ended June 30, 2023 as our residual business operations continue to wind down. operations.

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 or back rails. 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 six nine months ended June 30, 2024 September 30, 2024 and 2023:

(Dollars in thousands)

(Dollars in thousands)

(Dollars in thousands)		**2024**		**2023**		**Three Month Change**			**2024**		**2023**		**Six Month Change**				**2024**	**2023**		**Three Month Ch**	
Modules	Modules	$510,432	$	$500,320	$	$10,112	2	2 %	$957,698	$	$930,016	$	$	27,682	3	3 %	Modules	$438,274	$	$433,034	$
Other	Other	1,161	(67)	(67)	1,228	1,228	N/A	N/A	2,000	6,472	6,472	(4,472)	(4,472)	(69)	(69)%	Other		4,083	(8,119)	(	
Cost of sales	Cost of sales	$511,593	$	$500,253	$	$11,340	2	2 %	$959,698	$	$936,488	$	$	23,210	2	2 %	Cost of sales	$442,357	$	$424,915	$
% of net sales																					

Cost of sales increased $11.3 million $17.4 million, or 2% 4%, and decreased 11.1 3.2 percentage points as a percent of net sales for the three months ended June 30, 2024 September 30, 2024 compared to the three months ended June 30, 2023 September 30, 2023. The increase in cost of sales was driven by a $10.1 $5.2 million increase in our modules segment cost of sales primarily due to (i) higher costs of $128.6 $47.3 million due to an increase in the volume of modules sold and (ii) higher module storage costs of $22.6 million. These increases were partially offset by (ii) (iii) a higher sales mix of modules qualifying for the advanced manufacturing production credit under Section 45X of the IRC, which decreased cost of sales by $103.6 million compared to the prior period, (iii) lower ramp costs at $60.4 million. The increase in cost of sales was also driven by (iv) a $12.2 million increase in our newest Ohio and our Indian manufacturing facilities residual business operations' cost of $23.1 million, and (iv) lower sales freight of $13.7 million primarily due to a reduction favorable prior period settlement with a former supplier, which resulted in rates. an $8.4 million benefit to cost of sales.

Cost of sales increased $23.2 million $40.7 million, or 2% 3%, and decreased 15.7 10.9 percentage points as a percent of net sales for the six nine months ended June 30, 2024 September 30, 2024 compared to the six nine months ended June 30, 2023 September 30, 2023. The increase in cost of sales was driven by a $27.7 $32.9 million increase in our modules segment cost of sales primarily due to (i) higher costs of $309.9 million due to an increase in the volume of modules sold resulting in and (ii) higher module storage costs of $304.5 million and (ii) continued module costs reductions of $10.0 $66.5 million. These increases were partially offset by (iii) the recognition of the above-mentioned advanced manufacturing production credit, which decreased costs cost of sales by $227.9 $288.3 million, (iv) lower sales freight of $70.3 $36.1 million, and (v) lower production ramp costs of $29.7 $30.0 million. The overall increase in cost of sales was partially offset also driven by (vi) a $4.5 million decrease $7.7 million increase in our residual business operations operations' cost of sales as our residual business operations continue to wind down.

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 for the three and six nine months ended June 30, 2024 September 30, 2024 and 2023:

(Dollars in thousands)

(Dollars in thousands)

(Dollars in thousands)	2024	2023	Three Month Change		2024	2023	Six Month Change			2024	2023	Three Month Change		2024	2023	Nine Month Change
Gross profit Gross profit	$498,889	$ $310,420	$ $188,469	61 61 %	$844,892	$ $422,471	$ $422,421	100 100 %	Gross profit	$445,311	$ $376,175	$ $69,136	18 18 %	$1,290,203	$ $798,646	$ $491,5
% of net sales																

Gross profit as a percentage of net sales increased 11.1 3.2 percentage points to 49.4% 50.2% during the three months ended June 30, 2024 September 30, 2024 from 38.3% 47.0% during the three months ended June 30, 2023 September 30, 2023 primarily due to (i) termination payments associated with certain customer contract terminations in the U.S. and India and (ii) a higher sales mix of modules qualifying for the advanced manufacturing production credit described above. These increases were partially offset by (iii) a current period reduction in revenue related to the previously described manufacturing issues affecting certain Series 7 modules manufactured in 2023 and 2024 and (iv) higher module storage costs.

Gross profit as a percentage of net sales increased 10.9 percentage points to 47.9% during the nine months ended September 30, 2024 from 37.0% during the nine months ended September 30, 2023 primarily due to (i) a higher sales mix of modules qualifying for the advanced manufacturing production credit described above, (ii) higher utilization across our manufacturing plants, and (iii) our entitlement to a the customer contract termination payment from one of our European customers that reduced its module demand in the current period.

Gross profit as a percentage of net sales increased 15.7 percentage points to 46.8% during the six months ended June 30, 2024 from 31.1% during the six months ended June 30, 2023 primarily due to (i) a higher sales mix of modules qualifying for the advanced manufacturing production credit payments described above, (ii) higher utilization across our manufacturing facilities, and (iii) an increase in the volume of modules sold, sold. These increases were partially offset by (iv) higher module storage costs and (iv) lower sales freight. (v) a current period reduction in revenue related to the previously described manufacturing issues affecting certain Series 7 modules manufactured in 2023 and 2024.

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 six nine months ended June 30, 2024 September 30, 2024 and 2023:

(Dollars in thousands)

(Dollars in thousands)

(Dollars in thousands)		2024		2023		Three Month Change			2024		2023		Six Month Change				2024		2023		Three Month Change			2024		2023
Selling, general and administrative	Selling, general and administrative	$46,560	$	$46,328	$	$232	1	1 %	$92,387	$	$90,356	$	$2,031	2	2 %	Selling, general and administrative	$46,293	$	$50,172	$	$(3,879)	(8)	(8)%	$138,680	$	$140,528
% of net sales																										

Nine Month Change

Selling, general and administrative expense for the three and six nine months ended June 30, 2024 was consistent with September 30, 2024 decreased compared to the three and six nine months ended June 30, 2023. September 30, 2023 primarily due to lower employee bonus expense and lower expected credit losses, partially offset by higher costs for certain legal matters and consulting services.

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 six nine months ended June 30, 2024 September 30, 2024 and 2023:

(Dollars in thousands)

(Dollars in thousands)

(Dollars in thousands)		2024		2023		Three Month Change			2024		2023		Six Month Change				2024		2023		Three Month Change			2024		2023
Research and development	Research and development	$51,937	$	$36,745	$	$15,192	41	41 %	$94,679	$	$67,255	$	$27,424	41	41 %	Research and development	$50,197	$	$41,190	$	$9,007	22	22 %	$144,876	$	$108
% of net sales																										

Nine M Cha

Research and development expense for the three and six nine months ended June 30, 2024 September 30, 2024 increased compared to the three and six nine months ended June 30, 2023 September 30, 2023 primarily due to higher depreciation and maintenance costs resulting from our significant investments in R&D facilities and equipment and higher employee compensation expense resulting from an increase in headcount. equipment.

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 six nine months ended June 30, 2024 September 30, 2024 and 2023:

(Dollars in thousands)

(Dollars in thousands)

(Dollars in thousands)		2024		2023		Three Month Change			2024		2023		Six Month Change				2024		2023		Three Month Change			2024		2023		Nine Month Change	
Production start-up	Production start-up	$27,451	$	$23,377	$	$4,074	17	17 %	$42,859	$	$42,871	$	$(12)	—	— %	start-up	$26,822	$	$12,059	$	$14,763	122	122 %	$69,681	$	$54,930	$	$14,751	27
% of net sales																													

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

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 six nine months ended June 30, 2024 September 30, 2024 and 2023:

(Dollars in thousands)

(Dollars in thousands)

(Dollars in thousands)		**2024**		**2023**		**Three Month Change**			**2024**		**2023**		**Six Month Change**				**2024**		**2023**		**Three Month Change**			**2024**		**2023**		**Nine Month Change**
Foreign currency loss, net	Foreign currency loss, net	$(9,649)	$	$(4,652)	$	$(4,997)	107	107 %	$(12,507)	$	$(10,599)	$	$(1,908)	18	18 %	Foreign currency loss, net	$(5,158)	$	$(987)	$	$(4,171)	423	423 %	$(17,665)	$	$(11,586)	$	$(6,079)	52

Foreign currency loss, net for the three and six nine months ended June 30, 2024 September 30, 2024 increased compared to the three and six nine months ended June 30, 2023 September 30, 2023 largely due to higher costs associated with hedging activities related to our subsidiaries in India. India and certain other subsidiaries with exposure to the Euro.

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 six nine months ended June 30, 2024 September 30, 2024 and 2023:

(Dollars in thousands)

(Dollars in thousands)

(Dollars in thousands)		**2024**		**2023**			**Three Month Change**			**2024**		**2023**			**Six Month Change**				**2024**			**2023**		**Three Month Change**			**2024**		**2023**		**Nine Month Change**	
Interest income	Interest income	$24,599	$	$25,026	$	$	(427)	(2)	(2)%	$51,844	$	$50,848	$	$	996	2	2 %	Interest income	$22,580	$	$	23,254	$	$(674)	(3)	(3)%	$74,424	$	$74,102	$	$322	—	—	%

Interest income for the three and six nine months ended June 30, 2024 September 30, 2024 was consistent with the three and six nine months ended June 30, 2023 September 30, 2023. Although yields on our investments were generally higher in 2024, they were partially offset by lower average holdings of time deposits.

Interest expense, net

Interest expense, net is primarily comprised of interest incurred on debt. We may capitalize interest expense to our 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 six nine months ended June 30, 2024 September 30, 2024 and 2023:

(Dollars in thousands)

(Dollars in thousands)

(Dollars in thousands)	**2024**	**2023**	**Three Month Change**	**2024**	**2023**	**Six Month Change**	**2024**	**2023**	**Three Month Change**	**2024**	**2023**	**Nine Month Change**

Interest expense, net	Interest expense, net	$(9,765)	$	$(1,415)	$	$(8,350)	>500%	>500%		$(18,975)	$	$(2,163)	$	$(16,812)	>500%	>500%	Interest expense, net	$(9,008)	$	$(3,734)	$	$(5,274)	141	141	%	$(27,983)	$	$(5,897)	$ $

Interest expense, net for the three and six nine months ended June 30, 2024 September 30, 2024 increased compared to the three and six nine months ended June 30, 2023 September 30, 2023 primarily due to additional borrowing under various arrangements in India.

Other (expense) income, expense, net

Other (expense) income, expense, 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, expense, net for the three and six nine months ended June 30, 2024 September 30, 2024 and 2023:

(Dollars in thousands)

(Dollars in thousands)

(Dollars in thousands)	**2024**	**2023**	**Three Month Change**		**2024**	**2023**	**Six Month Change**		**2024**	**2023**	**Three Month Change**	**2024**	**2023**	**Nine Month Change**
Other (expense) income, net	$ (565)	$ 997	$ (1,562)	N/A	$ (3,364)	$ (459)	$ (2,905)	>500%						
Other expense, net	$ (3,071)	$ (1,033)	$ (2,038)	197 %	$ (6,435)	$ (1,492)	$ (4,943)	331 %						

Other (expense) income, expense, net for the three and six nine months ended June 30, 2024 decreased September 30, 2024 increased compared to the three and six nine months ended June 30, 2023 September 30, 2023 primarily due to commitment fees on our Revolving Credit Facility. Facility and costs associated with the liquidation of certain inactive legal entities.

Income tax expense

Income tax expense or benefit, deferred tax assets and liabilities, and liabilities for unrecognized tax benefits reflect our best estimate of current and future taxes to be paid. We are subject to income taxes in both the United States and numerous foreign jurisdictions in which we operate, principally Singapore, Malaysia, Vietnam, and India. 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, Vietnam, and India are 17%, 24%, 20%, and 17%, 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 for the three and six nine months ended June 30, 2024 September 30, 2024 and 2023:

(Dollars in thousands)

(Dollars in thousands)

(Dollars in thousands)		**2024**		**2023**		**Three Month Change**			**2024**		**2023**		**Six Month Change**				**2024**		**2023**		**Three Month Change**		**2024**	**2023**		**Nine Month Change**
Income tax expense	Income tax expense	$(27,775)	$	$(17,892)	$	$(9,883)	55	55 %	$(46,678)	$		$(11,004)	$	$(35,674)	324	324 %	Income tax expense	$(14,386)	$	$(22,067)	$	$7,681	(35)	(35)%	$(61,064)	$ $(33,071
Effective tax rate																										

Our tax rate is affected by the advanced manufacturing production credit under Section 45X and 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. During the three nine months ended June 30, 2024 September 30, 2024, we reversed our position to indefinitely reinvest the accumulated earnings of a foreign subsidiary and recorded discrete tax expense of approximately $6 million. There were no other changes to our indefinite reinvestment assertions during the quarter. period.

Income tax expense increased $9.9 million decreased $7.7 million during the three months ended June 30, 2024 September 30, 2024 compared to the three months ended June 30, 2023 September 30, 2023 primarily due to higher prior period losses in certain jurisdictions for which no tax benefit could be recorded, partially offset by higher pretax income and the effect of tax law changes associated with the proposed FTC regulations.

Income tax expense increased $28.0 million during the nine months ended September 30, 2024 compared to the nine months ended September 30, 2023 primarily due to higher pretax income, lower excess tax benefits associated with share-based compensation, and the discrete tax expense associated with the reversal of our indefinite reinvestment assertion described above.

Income above, partially offset by higher prior period losses in certain jurisdictions for which no tax expense increased $35.7 million during the six months ended June 30, 2024 compared to the six months ended June 30, 2023 primarily due to higher pretax income and lower excess tax benefits associated with share-based compensation. benefit could be recorded.

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, and government grants 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, 2023. There have been no material changes to our accounting policies during the six nine months ended June 30, 2024 September 30, 2024.

Recent Accounting Pronouncements

In December 2023, the Financial Accounting Standards Board issued Accounting Standards Update ("ASU") 2023-09, *Income Taxes (Topic 740) — Improvements to Income Tax Disclosures*, which requires greater disaggregation of an entity's income tax disclosures. Among other things, ASU 2023-09 requires entities to disclose (i) specific categories in the effective tax rate reconciliation, (ii) pretax income or loss from continuing operations, separated between domestic and foreign jurisdictions, (iii) income tax expense or benefit from continuing operations, separated by federal, state, and foreign jurisdictions, and (iv) income taxes paid to federal, state, and foreign jurisdictions. ASU 2023-09 is effective for public companies for annual periods beginning after December 15, 2024; although early adoption is permitted, we do not expect intend to do so. We are currently evaluating the impact ASU 2023-09 will have on our consolidated financial statements and associated disclosures.

Liquidity and Capital Resources

As of June 30, 2024 September 30, 2024, 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, which is unused as of June 30, 2024 September 30, 2024. As necessary, we also believe we will have adequate access to the capital markets. 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 financing could result in increased debt service expenses and/or restrictive covenants, which could limit our ability to pursue our strategic plans.

As of June 30, 2024 September 30, 2024, we had $1.7 billion $1.3 billion in cash, cash equivalents, and marketable securities compared to $2.1 billion as of December 31, 2023. This decrease was primarily driven by purchases of property, plant and equipment for our U.S. and Indian facilities, various operating expenditures, and certain advance payments of for raw materials, partially offset by proceeds from the sale of Section 45X tax credits and net cash receipts from module sales sales. As of June 30, 2024 September 30, 2024 and December 31, 2023, $1.4 $0.5 billion and $1.2 billion of our cash, cash equivalents, and marketable securities, respectively, was held by our foreign subsidiaries and was primarily based in U.S. dollar 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 certain subsidiaries for which applicable income taxes have been recorded as of June 30, 2024 September 30, 2024. During the three nine months ended June 30, 2024 September 30, 2024, we reversed our position to indefinitely reinvest the accumulated earnings of a foreign subsidiary, allowing us to repatriate certain $1.0 billion of offshore funds to support our strategic investments in the United States. Accordingly, in July 2024, we repatriated $1.0 billion of offshore funds. Our worldwide cash may also be affected by changes to foreign government banking regulations that 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 by the IRS 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. In December 2023, we entered into an agreement with Fiserv for the sale of $687.2 million of Section 45X tax credits we generated during 2023 for aggregate cash proceeds of $659.7 million. We received the full cash proceeds during the six nine months ended June 30, 2024 September 30, 2024. 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, 2023. See Note 5. "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 commenced production of Series 7 modules at our third manufacturing facility in Ohio and our first manufacturing facility in India during 2023. 2023 and at our first manufacturing facility in Alabama during the three months ended September 30, 2024. We are in the process of expanding our manufacturing capacity, including the construction of our fourth and fifth manufacturing facilities facility in the United States, which are is expected to commence operations in the second halves half of 2024 and 2025, respectively. In aggregate, we currently expect 2025. We anticipate our remaining investment in these this U.S. facilities and upgrades facility to be approximately $1.4 $0.9 billion, which we expect is expected to incur be incurred throughout 2024 and 2025. The capital expenditures necessary to expand our capacity may be financed, in part, by cash on hand, 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, 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 the completion of a dedicated R&D innovation center in the United States to support the implementation of our technology roadmap. This facility features a high-tech pilot manufacturing line, which is expected to enable the production of full-sized prototypes of thin film and tandem PV modules. Such R&D facility was commissioned in July 2024. During 2024, we expect to spend between $1.8 billion and $2.0 approximately $1.6 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 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, 2023.

We have also committed and expect to continue committing to commit 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 $518.5 $503.5 million as of June 30, 2024 September 30, 2024 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 June 30, 2024 September 30, 2024, such funds were comprised of restricted marketable securities of $200.2 $211.1 million and associated restricted cash and cash equivalents balances of $1.8 $4.5 million. As of June 30, 2024 September 30, 2024, our module collection and recycling liability was $134.8 $139.0 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 June 30, 2024 September 30, 2024, 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 10. "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 six nine months ended June 30, 2024 September 30, 2024 and 2023 (in thousands):

	Six Months Ended June 30,		Nine Months Ended September 30,	
	2024	2023	2024	2023

Net cash provided by (used in) operating activities	
Net cash provided by operating activities	
Net cash used in investing activities	
Net cash (used in) provided by financing activities	
Effect of exchange rate changes on cash, cash equivalents, restricted cash, and restricted cash equivalents	
Net decrease in cash, cash equivalents, restricted cash, and restricted cash equivalents	
Net (decrease) increase in cash, cash equivalents, restricted cash, and restricted cash equivalents	

Operating Activities

The increase in net cash provided by operating activities was primarily driven by proceeds from the sale of Section 45X credits. tax credits and higher cash receipts from module sales in the current period, partially offset by an increase in payments made to suppliers compared to the prior period.

Investing Activities

The decrease increase in net cash used in investing activities was primarily due to lower purchases proceeds from the sales and maturities of marketable securities in the current period and net cash paid for a business acquisition in the prior period, partially offset by higher purchases of property, plant and equipment in the current period for our U.S. and Indian facilities. facilities, partially offset by lower purchases of marketable securities and restricted marketable securities in the current period.

Financing Activities

The decrease in net cash provided by financing activities was primarily due to lower net borrowing under various repayment of debt agreements in the current 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, 2023.

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 June 30, 2024 September 30, 2024 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 June 30, 2024 September 30, 2024 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 June 30, 2024 September 30, 2024.

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 10. “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, 2023, which could materially affect our business, financial condition, results of operations, or and 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 and cash flows. There Except for the risk factor set forth below, there have been no material changes in the risk factors contained in our Annual Report on Form 10-K.

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

We perform a variety of module quality and life tests under different environmental conditions upon which we base our assessments of future module performance over the duration of the warranty. However, if our thin film solar modules perform below expectations, we could experience significant warranty and related expenses, damage to our market reputation, and erosion of our market share. With respect to our modules, we provide a limited warranty covering defects in materials and workmanship under normal use and service conditions for up to 12.5 years. We also typically warrant that modules installed in accordance with agreed-upon specifications will produce at least 98% of their labeled power output rating during the first year, with the warranty coverage reducing by a degradation factor every year thereafter throughout the limited power output warranty period of up to 30 years. Among other things, our solar module warranty also covers the resulting power output loss from cell cracking.

We have identified manufacturing issues affecting certain Series 7 modules manufactured in 2023 and 2024 that may cause the modules to experience premature power loss once installed in the field. We currently believe the primary causes of the issues have been identified and we have taken actions to address such issues. The ultimate loss we will incur for these manufacturing issues will depend on the extent of the premature power loss that is experienced in relation to the obligations under our limited product warranties, as well as any additional commitments we may make to remediate the affected modules. Based on currently available information and certain assumptions and estimates, we believe a reasonable estimate of the aggregate losses related to these manufacturing issues will range from approximately $50 million to $100 million. At this time, no individual amount within that range is a better estimate than any other amount. Accordingly, we increased our product warranty liability by the low end of the range. The estimated range set forth above was based on our evaluation of the currently available information, including select samples of module performance data from several locations, the estimated number of affected modules, and projections of probable costs to remediate the issues. If any of our estimates or assumptions related to the above referenced manufacturing issues are not accurate, we may be required to accrue additional expenses, which could adversely impact our reputation, financial position, operating results, and cash flows.

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

Although our module performance warranties extend for up to 30 years, our oldest solar modules manufactured during the qualification of our pilot production line have only been in use since 2001. Accordingly, our warranties are based on a variety of quality and life tests that enable predictions of durability and future performance. These predictions, however, could prove to be materially different from the actual performance during the warranty period, causing us to incur substantial expense to repair or replace defective solar modules or provide financial remuneration in the future. For example, our solar modules could suffer various failures, including breakage, delamination, corrosion, or performance degradation in excess of expectations, and our manufacturing operations or supply chain could be subject to material or process variations that could cause affected modules to fail or underperform compared to our expectations. These risks could be amplified as we implement design and process changes in connection with our efforts to improve our products and module wattage as part of our long-term strategic plans. In addition, if we increase the number of installations in extreme climates, we may experience increased failure rates due to deployment into such field conditions. Any widespread product failures may damage our market reputation, cause our net sales to decline, require us to repair or replace the defective modules or provide financial remuneration, and result in us taking voluntary remedial measures beyond those required by our standard warranty terms to enhance customer satisfaction, which could have a material adverse effect on our reputation, financial position, operating results, and cash flows.

In resolving claims under both the limited defect and power output warranties, we typically have the option of either repairing or replacing the covered modules or, under the limited power output warranty, providing additional modules to remedy the power shortfall or making certain cash payments; however, historical versions of our module warranty did not provide a refund remedy. Consequently, we may be obligated to repair or replace the covered modules under such historical programs. As our manufacturing process may change from time-to-time in accordance with our technology roadmap, we may elect to stop production of older versions of our modules that would constitute compatible replacement modules. In some jurisdictions, our inability to provide compatible replacement modules could potentially expose us to liabilities beyond the limitations of our module warranties, which could adversely impact our reputation, financial position, operating results, and cash flows.

In addition to our limited solar module warranties described above, for PV solar power systems we have constructed for customers in prior periods, we have provided limited warranties for defects in engineering design, installation, and balance of systems ("BoS") part workmanship for a period of one to two years following the substantial completion of a system or a block within the system. BoS parts represent mounting, electrical, and other parts used in PV solar power systems. In resolving claims under such BoS warranties, we have the option of remedying the defect through repair or replacement. As with our modules, these warranties are based on a variety of quality and life tests that enable predictions of durability and future performance. Any underperformance or failures in BoS equipment beyond our expectations may also adversely impact our reputation, financial position, operating results, and cash flows.

In addition, our contracts with customers may include provisions with particular product specifications, minimum wattage requirements, and specified delivery schedules. These contracts may be terminated, or we may incur significant liquidated damages or other damages, if we fail to perform our contractual obligations. In addition, our costs to perform under these contracts may exceed our estimates, which could adversely impact our profitability. Any failures to comply with our contracts for the sale of our modules could adversely impact our reputation, financial position, operating results, and cash flows.

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 June 30, 2024 September 30, 2024, none of our officers or directors adopted or terminated non-Rule 10b5-1 trading arrangements. However, certain of our officers adopted Rule 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)
Byron Jeffers Markus Gloeckler	Chief Accounting Technology Officer	Adoption	May 9, August 1, 2024	April 30, December 31, 2024	4,973
Caroline Stockdale	Chief People & Communications Officer	Adoption	August 16, 2024	August 15, 2025	2,266 9,942

(1) Represents the gross number of shares subject to the Rule 10b5-1(c) plan, excluding the potential effect of shares withheld for taxes.

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 May May 9, 2024)9, 2024)
10.1*	Amendment No.1 to Guaranty Agreement dated June 21, 2024, between First Solar, Inc. and United States International Development Finance Corporation
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: July 30, 2024 October 29, 2024	By:	/s/ BYRON JEFFERS
	Name:	Byron Jeffers
	Title:	Chief Accounting Officer

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Execution Version

EXHIBIT 10.1

Execution Version

AMENDMENT NO. 1 TO GUARANTY AGREEMENT

This AMENDMENT NO. 1 TO GUARANTY AGREEMENT (this "***Amendment***"), dated as of June 21, 2024, is by and between:

(1) FIRST SOLAR INC., a Delaware corporation (the "***Guarantor***"); and

(2) UNITED STATES INTERNATIONAL DEVELOPMENT FINANCE CORPORATION, an agency of the United States of America ("***DFC***").

WHEREAS:

(1) FS India Solar Ventures Private Limited, a private limited company organized and existing under the laws of the Republic of India with CIN U29308DL2020FTC371690 (the "***Borrower***"), and DFC have entered into a Finance Agreement, dated as of July 27, 2022, as amended by that certain Amendment No. 1 to Finance Agreement, dated as of August 5, 2022, and as further amended by that certain Waiver and Amendment No. 2 to Finance Agreement, dated as of April 18, 2024 (as further amended, restated, supplemented or otherwise modified and in effect from time to time prior to the date hereof, the "***Finance Agreement***");

(2) the Guarantor and DFC have entered into that certain Guaranty Agreement, dated as of August 4, 2022 (as amended, restated, supplemented or otherwise modified and in effect from time to time prior to the date hereof, the "***Agreement***"), pursuant to which the Guarantor has agreed, among other things, to guarantee the obligations of the Borrower under the Finance Agreement;

(3) the Guarantor and DFC desire to amend the Agreement to require the Guarantor to maintain a Current Ratio of no less than 1.50 to 1.00, in replacement of the existing requirement to maintain a Current Ratio of no less than 2.50 to 1.00, subject to the terms and conditions contained in this Amendment; and

(4) capitalized terms used but not otherwise defined in this Amendment shall have the respective meanings set forth in Section 1(a) of the Agreement, and the rules of interpretation set forth in Section 1(b) of the Agreement shall apply to this Amendment as if fully set forth herein.

NOW, THEREFORE, in consideration of the premises and of the agreements contained herein and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows:

1. *Amendments*. Section 8(e)(iii) of the Agreement is amended by deleting the existing section and replacing it with the following:

"(iii) at all times and on a Consolidated Basis, a Current Ratio of no less than 1.50 to 1.00."

2. *Representations*. The Guarantor represents and warrants that the representations and warranties of the Guarantor set forth in the Agreement are true and correct in all material respects (except with respect to any provision including the word "material" or words of similar import, with respect to which such representations and warranties are true and correct) as of the date hereof, or if any such representation relates exclusively to an earlier date, as of such earlier date.

3. *Miscellaneous*.

(a) *No Other Amendments*. Except as specifically amended by Section 1 (*Amendments*) of this Amendment, all of the terms, conditions and provisions of the Agreement shall remain unaltered and in full force and effect and are hereby ratified and confirmed.

(b) *Effect of Amendment*. Upon the effectiveness of this Amendment as provided in clause (c) below, each reference in the Agreement to "this Agreement," "hereunder," "hereof," "herein," or any other word or words of similar import, shall mean and be a reference to the Agreement as amended hereby, and each reference in any other document to the "Finance Agreement" or any word or words of similar import referring to the Agreement shall mean and be a reference to the Agreement as amended hereby.

(c) *Counterparts; Effectiveness*. This Amendment may be executed and delivered in counterparts, each of which when so executed and delivered shall be deemed an original, and all of which together shall constitute one and the same instrument. This Amendment shall become effective when it shall have been executed by each party hereto and when DFC shall have received counterparts hereof that, when taken together, bear the signatures of the other parties hereto. Delivery of an executed counterpart of a signature page of this Amendment in an electronic format (including .pdf, .tif, and .jpeg file format) shall be effective as delivery of a manually executed counterpart of this Amendment. The words "execution", "signed", "signature" and words of like import shall be deemed to include electronic signatures or the keeping of records in electronic form, each of which shall be of the same legal effect, validity, or enforceability as a manually executed signature or the use of a paper-based recordkeeping system, as the case may be, to the extent and as provided for in any Applicable Law, including the Federal Electronic Signatures in Global and National Commerce Act, 15 U.S.C. §§ 7001 to 7006, 7021, 7031; the New York State Electronic Signatures and Records Act, NY State Tech. Law § 301; or any other similar state laws based on the Uniform Electronic Transactions Act.

(d) *GOVERNING LAW*. THIS AMENDMENT AND ANY CLAIM, CONTROVERSY, DISPUTE, OR CAUSE OF ACTION (WHETHER IN CONTRACT, TORT OR OTHERWISE) BASED UPON, ARISING OUT OF OR RELATING TO THIS AMENDMENT AND THE TRANSACTIONS CONTEMPLATED HEREBY SHALL BE GOVERNED BY, AND CONSTRUED IN ACCORDANCE WITH, THE LAWS OF THE STATE OF NEW YORK, UNITED STATES OF AMERICA, WITHOUT REGARD TO CONFLICT OF LAW PRINCIPLES THAT WOULD OTHERWISE DIRECT APPLICATION OF THE LAW OF ANOTHER JURISDICTION.

[*Signature pages follow*]

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be duly executed as of the date first above written.

FIRST SOLAR, INC.

By:

Name:

Title:

UNITED STATES INTERNATIONAL DEVELOPMENT FINANCE CORPORATION

By:

Name:

Title:

4 Amendment No. 1 to Guaranty Agreement (DFC/FSLR)57

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 June 30, 2024 September 30, 2024, 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.

July 30, October 29, 2024	By:	/s/ MARK R. WIDMAR
	Name:	Mark R. Widmar
	Title:	Chief Executive Officer

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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 June 30, 2024 September 30, 2024, 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.

July 30, October 29, 2024	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 June 30, 2024 September 30, 2024, 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

July 30, October 29, 2024	By:	/s/ MARK R. WIDMAR
	Name:	Mark R. Widmar
	Title:	Chief Executive Officer
July 30, October 29, 2024	By:	/s/ ALEXANDER R. BRADLEY
	Name:	Alexander R. Bradley
	Title:	Chief Financial Officer

DISCLAIMER

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